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FORESTS AND RECREATION

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F O R E S T S A N D R E C R E A T I O N

A Comparison of the United States and the
Federal Republic of Germany

Submitted in Accordance with
Cooperative Research Agreement 16-314-CA
between
Rocky Mountain Forest & Range Experiment Station
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ROCKY MOUNTAIN STATION

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F O R E S T S A N D R E C R E A T I O N

A comparison of the United States and the Federal Republic of Germany

P R E F A C E

Forests once dominated the landscape of the earth; today, forests of one type or another remain an important but diminishing part of the natural ecosystem, covering approximately one-third of the land surface of the globe. Humanity had its early beginnings within or near forest environments, but only in relatively recent times has the forest become valued as a recreation environment, particularly in industrialized nations.

With demands for outdoor recreation increasing, controversy mounting over the allocation of limited forest resources to meet these demands and forest resources providing a major element in the overall outdoor recreation scene in industrialized countries, much can be learned about forest resource utilization for recreation purposes by going beyond the political boundaries of a nation-state and viewing the situation from an international aspect.

This study was undertaken to do just that by comparing the forest recreation systems of the United States and the Federal Republic of Germany with consideration given to: the history, evolution and development of various types of forest-based recreation; the apparent effects of population levels, distributions, and characteristics on demand for various types of forest-based recreation; and the effects of forest resource characteristics, forest ownership patterns, management practices, and selected social, legal and insti-

tutional factors on forest-based recreation activities.

In striving for comprehensive consideration of all these factors, an attempt is made to present the material in an analytical manner. Following a general to specific pattern, the report is divided into three parts. Part I serves as an introduction to: the concept used to compare the two forest recreation systems; the general socioeconomic structure of the two societies; and the overall outdoor recreation resources at their disposal. Since forest recreation is an integral segment of the overall forestry field, in Part II a look is taken at the evolved forestry systems of the two countries. Part III delves into historical aspects of forest recreation, views the "state of the art" of forest recreation in reference to supply and demand relationships in the two countries, and presents an analysis of the two forest recreation systems.

The simple facts that the study is international in scope, of a comparative nature and intended to be of interest to two large reading audiences - the German and American societies - created many obstacles. Different systems of measure necessitated conversion to uniform units; in keeping with the trend for converting to the metric system, all units for the United States were resolved to this system. A table of applied conversion factors is included in the Appendix. Variations in, or lack of, compilation of comparative data for one or the other culture were likewise problematic. Regrettably, aiming at a double audience and in order to maintain a comparative view required the inclusion of much material superficial for one sector but of value to the other. Finally, reference material attained voluminous proportions. To circumvent the use of large footnote numbers, but at the expense of repetition, references are included at the end of the respective chapters. In the interest of furthering international inter-

change of information and intended as a reference base, a selected bibliography is included in the appendix.

The study could not have been accomplished without the moral and financial support of numerous individuals and agencies. It began by the author coming to Germany under a scholarship of the Deutsche Akademische Austauschdienst in conjunction with the Fulbright Program. Subsequent financial support was given by the U.S. Forest Service in cooperation with Colorado State University.

Special appreciation is extended to Oberforstrat Dr. Rolf Zundel, of the Landscape maintenance Department, Baden-Württemberg Forest Research Station, Freiburg, for the encouragement and advise in using the study as a PhD Dissertation with the forestry faculty, Albert-Ludwigs-Universität, Freiburg, and for his coordination efforts with the U.S. Forest Service. Further valuable advice came from Professor Nießlein and numerous other members of the University of Freiburg forestry faculty.

Acknowledgement is also due to Dr. Ross Whaley and Dr. Al Dyer, Colorado State University, and Keith Arnold, U.S. Forest Service for their coordinative efforts and assistance required throughout the project.

Special thanks are extended to my wife for her financial support, to Heidi Müller for her invaluable contributions in bringing the German version of the report into readable form, and to Gerda Meyer and Heidi Poshbeck for putting the reports in final type.

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PART I
INTRODUCTION:
CONCEPTS, SOCIETIES and PHYSICAL SETTINGS

"Forests are the foundation of human life, the cradle of culture, the source, and the part of the scene, of all that has given to the world its every art, and all of its music, from that made by the warbling and the whirring wings of birds to that written by Mozart and Beethoven, ..."¹⁶

The quotation is a philosophical approach to the meaning of forests and yet, there is perhaps more wisdom in the statement than first meets the eye. It portrays an interaction among three major elements of planet earth - forests, society and human culture.

Throughout history, forests have had a prominent part in molding human culture, but at the same time humans have impacted vast forest regions through their particular value systems. With time, forests have taken on new values for humanity, from that of a basic source of subsistence to that of providing a suitable environment for recreation. Although forests continue to be utilized as a prime source of subsistence in remote regions of the world, in the industrialized nation-states forest products have taken on diverse forms and new values. And even though these products have always been available in any given forest, it is only in relatively recent times that they have been appreciated. Such is the case for forest recreation.

Forests have always produced, as one of their numerous products, an environment for restituting the human soul

and spirit as well as the physical health of human beings. But until the turn of the century, use of the forest environment for recreation was primarily a function of the elite social classes. Not until the advent of the National Park System in the United States did large-scale forest areas become reality as "public pleasuring grounds".

Forestry, originating in Europe and Germany in particular, had its roots taking hold by the middle of the eighteenth century. Although the basic principles of forestry have been exported, they have had to be adapted to fit the specific needs of other cultures and natural environments. The same is true for forest recreation. Basic principles can be translocated, but must be transformed to suit the individual needs of a society, its culture and its environment.

Since scientific forestry had its beginnings in Germany and the setting aside of forest recreation areas on an extensive scale has its origin in the United States, a comprehensive study of the utilization of the forest resources within each culture relative to forest recreation environments can provide several benefits.

The Federal Republic of Germany is nearly ten times more densely populated than the United States and is also highly industrialized; thus, the demand for forest recreation can be presumed to be quite high in relation to that in the United States. Demographers seem certain that the population of the United States will increase substantially at least up to the next century even with a declining birth rate presently prevailing.

Therefore, it seems reasonable that, by researching a culture that has already experienced a high population density, an insight can be gained to some of the circumstances surrounding the provision of forest recreation under high-population density conditions.

Furthermore, by contrasting the forest recreation systems of these two countries, innovations practiced in one culture are bared and made accessible for possible application in the other culture. In the same light, problems confronted by one society may be eased or avoided in the other by viewing the situation under two cultural circumstances. In any event, by taking a hard look at the "what, why and how" of two diverse forest recreation systems, a better international understanding should be precipitated.

CHAPTER I

IDEOLOGICAL FORESTRY CONCEPT

Approaching the problem of comparing forest recreation systems from a national basis requires that the study be extensive in scope. Although some research on recreation of an international nature has been accomplished for areas of lesser scales, too often they do not encompass the total concept of cultural diversity. To secure a true picture of forest recreation as practiced by a society, a basic knowledge of the intricate interrelationship of at least the major components which comprise a culture, and their thrust exerted on recreation goals, must be taken under consideration. A frequent error encountered when literature on the subject of forest recreation is reviewed, is the tendency for authors to neglect externalities, confining the discussion to a too limited perspective without making adjustments for relative factors broader in range.

In an attempt to avoid this pitfall and still remain within the scope of this study, the Ideological Forestry Concept was formulated (figure 1). On the one hand it is designed to portray the primary elements involved in arriving at the satisfaction of forest recreation needs and desires in a society. On the other hand, the model provides a convenient basis and a compatible framework to compare distinct forest recreation systems.

American Heritage Dictionary defines an ideology as "the body of ideas reflecting the social needs of an individual, group, clans, or culture". Ideology, therefore refers to a society's basic belief systems and their application to daily life, consisting of world views,

FIGURE 1

MAJOR ELEMENTS of a FORESTRY IDEOLOGY

Society = Group — Culture = Group's Values — Institutions = Expression of Group's Values				
Process	(Family) - Government	- Economic System	- Education	- (Religion)
	- legislation	- benefits	- professional	
	- policies	- costs	- public	
	Land Tenure System			
	- public property			
Means	- private property			
	Forestry			
	- profession			
	- science, art, practice			
	Management			
Utilization	Range - Watershed - Wildlife - Recreation - Timber - Environmental Protection			
Products	Forest Resource Base			
Goals	Forage - Water - Wildlife - Recreation - Wood - Environmental Protection			
	Quantity - Quality - Type			
Satisfaction of Society's Needs and Aspirations for Forest Products				

human inputs

natural limitations

human inputs

natural limitations

values, and norms: World views are those beliefs which concern the ultimate nature of reality and their interpretation of the totality of experience; values are those generalized beliefs to which members of the group subscribe; and norms are those behavioral prescriptions and proscriptions for the members of their specific roles in specific situations.¹⁰

Forestry is "a profession embracing the science, business and art of creating, conserving and managing forest and forest lands for continuing use of their resources, material or other forest produce"; it is also "the science, the art and the practice of managing and using for human benefit the natural resources that occur on and in association with forest lands".⁶ According to these accepted definitions of forestry, it is both a profession and a "science, art and practice". In neither case are outside influences indicated.

Ideological forestry denotes a wider spectrum. It embodies the manner or content of thinking expressing the views and values of a society or its culture relative to its forest resource. It is not only a profession and science, but also encompasses all those values, ideas and beliefs which reflect the needs and desires of the human entity within a culture. In essence, ideological forestry connotes the totality of those ideas depicting the social needs and aspirations of a culture regarding the utilization of its forest resources relative to a set of world views, values and norms. Forest recreation, as an integral part of forestry, is but a single component within the complex network of the forestry ideology.

1.1. Society

A society is the largest meaningful group to which an individual belongs and usually coincides with a nation or nation-state.¹² Therefore, when speaking of the comparison of Germany and the United States, it is the comparison of the two societies in connection with their respective forest environments. The natural population characteristics of the societies have a definite impact on how the forest resource is used to fulfill the society's demands for forest recreation. These tendencies of a society are dominated more by natural social developments rather than by specific inputs by society as a group to achieve a particular purpose. It is difficult to direct these natural tendencies towards any special goal; they must be accepted as a natural phenomenon governed by the inherent chemistry of the population, but influenced by the institutions established by the society.

1.2. Culture

Culture is an elusive term; more than 160 ways of defining the word exist so there is no need to derive a new definition.¹ Still, it is necessary to bring the expression into proper perspective as applicable to this study.

1.2.1. Qualities of Culture

Culture is learned. To be learned, it must be taught, although not necessarily consciously. In order to teach a culture, it must be transmitted or communicated by

means of body language, facial expressions, spoken or written language, seat arrangement, carpet thickness or practically an infinite number of ways.⁹ If culture is taught, then it follows that it can be changed or unlearned; modifying human behaviour may be difficult, but it can be given new and different kinds of direction.

Culture is dynamic. With time new traits are accumulated and some outmoded habits are dropped, but frequently many traits become so ingrained through adaptation that they are given up with great reluctance. Cultural traits spread from one society to another through what is commonly referred to as diffusion; distance between societies is often thought to be a hindrance to cultural diffusion, but persistent attitudes and traditions can create even greater barriers.¹²

Culture is integrated. Integration may refer to individual parts being related. In the cultural sense, the parts would be institutions such as political, economic, religious, familistic, etc. Anthropologists describe cultural integration as the situation that occurs when all phases of a culture seem to blend together and are expressed in terms of certain major values and beliefs, but in modern society with its complex structure, cultural integration is far more difficult to differentiate than in earlier cultures.¹²

Integration may also refer to the process of bringing new elements into a culture. These elements will be integrated voluntarily only if they fit the needs and values of the receiving culture; in general, foreign ideas and customs are less likely to be integrated than are products and techniques. When an element is to

be integrated in a new culture it is often poorly understood in its original situation and is subsequently reinterpreted in terms of more traditional views of the recipient culture.¹²

Cultures are diverse. Cultural diversity developed because different ways of life have been learned by people living in specific areas of the world. This diversity should not be construed as abnormal; on the contrary, it should be viewed as a normal phenomenon and as a positive value to humanity. Yet, although cultural diversity should be valued, the diversity itself creates a problem in that communication is impeded between individuals and groups with contrasting cultural backgrounds.

1.2.2. Cultural Communication⁷

A culture can be expressed as existing at two niveaux - the explicit and implicit levels. At the explicit level the opposite culture is obvious; it can be seen or easily verbalized and understood. Communication between cultures at the explicit level is seldom impeded and, therefore, creates very little adversity.

In contrast to the easily recognizable and readily understood characteristics of the explicit level, the implicit level is more difficult to discern. It is the niveau of unconscious behavior where things are taken for granted and are no longer questioned. At this level most people of a particular culture tend to share so high a level in values, attitudes and traditions that situations are defined, and response thereto is so similar, that no verbal transaction need occur.

Behavior patterns at this niveau are so taken for granted and no longer questioned that there is a tendency to lose sight of their existence; they tend to be viewed as human nature.

When cultural lines are crossed in modern society, realistic and rational judgments can only be made within a frame of reference. This frame of reference is one's culture, not only at the explicit level, but more important, at the less discernible implicit level.

1.2.3. Cultural Insights

Culture has a multitude of facets - it consists of institutions, behavior patterns, values and human occupancy of landscape. It is transmitted, learned, integrated and changed. Ways of life are often persistent, but new knowledge is accumulated. In order to accumulate knowledge, there must be communication and, to maintain viable communication, a proper frame of reference must be established to make sound judgments and evaluations. Culture is that frame of reference. By utilizing a proper frame of reference, communication at all societal levels can be improved whether it be at the local, national or international niveaux.

In essence, people are products of their environments. They are offsprings of specific cultural and sub-cultural systems even to the way they think, state problems and submit solutions. No cultural system is perfect; consequently, no one system is inherently more marketable than another. Instead, much is to be learned from the other.

1.3. Institutions

Institutions evolve out of fundamental human interests or needs of individuals and act as mechanisms to satisfy a society's interests or needs. When an individual finds a means to satisfy an interest, others copy it, developing the means into a folkway. Once a folkway becomes accepted to the point that it is "wrong" not to follow it, a moral aspect evolves in the folkway to make it a more. Mores accumulate mechanisms or behavior patterns for their enforcement which then become a fundamental phase of social organization, establishing the institutional stage.⁷ Institutions are developed within a society as a part of its culture and fundamental human interests. As was the case with culture, institution as a term defies precise definition, but all institutions possess common characteristics.

1.3.1. Characteristics of Institutions⁸

Institutions are universal. Given that an institution is built upon a central fundamental interest indicates that people everywhere, regardless of stage of cultural development, geographic area or general way of life, have the same common interests. These interests have always been with humanity, and although means for satisfying them have varied with time and place, the various means eventually became institutionalized.

Institutions are diverse. Diversity among institutions from one society to another occurs in their mechanisms, functions and relative importance. Basic in all societies is making a living, giving rise to economic institutions, but the structure may consist of simple

subsistence agriculture to a highly complex economic organization of an industrialized nation. Functional variation is exemplified by education: In a primitive society the family may perform the educational function, whereas in modern society this function has in the most part been delegated to educational institutions functioning outside the family. The relative importance of an institution is realized by the value placed on it, varying from one society to another.

Institutions are dynamic. Just as culture changes, institutions also undergo constant adjustments; they are among the most stable aspects of a culture, however, and changes are likely to be so gradual that they may go unnoticed for extensive periods of time.

Institutions are interrelated. Although institutions are generally studied as entities in themselves, they are intricately interwoven in the total cultural complex of a society. They are so closely related that a change in one is very apt to have definite effects on all the others.

1.3.2. Institutions and Culture

A culture's institutions can be seen as manifestations of a society's values, traditions, beliefs and attitudes. Although not a complete measure with which to evaluate a culture, institutions do provide a simple model framework wherein two or more cultures can be contrasted to one another.

While the five basic institutions - family, religion, government, economic and education - are considered

present in any culture, further reduction of these primary mechanisms or organized behavior patterns into subsidiary institutions shows a lack of certain institutional elements within various cultures. For example, forestry as a profession and practice can be viewed as a secondary institution operating within the overall framework of the five primary cultural institutions. Carrying the reductive process a step further, forest recreation could be seen as a tertiary institution operating in the confines of forestry; on an organized level, it is usually present only in the more industrialized societies.

By being aware of the relative positions of the institutions, or lack thereof, and by considering the relative importance of interacting institutions, an insight of a society's cultural values can be gained. These main institutional interactions can then be correlated to their influence on a natural resource, in this case, the forest.

1.4. Institutions of Ideological Forestry

Although the five major institutions are found in every society, in industrialized cultures the family and religious institutions play a relatively minor part in determining utilization of forest resource. In past eras, before the advent of forestry, certain religious beliefs had a dominant impact [some good, some adverse] on the fate of forests in various parts of the world. Other than the cases of "family forests", where inheritance plays a role or similar circumstances, the familistic institution in modern society affects forest recreation more through natural factors such as in-

creasing population or demand for a particular type of recreation than by planned objectives. Therefore, of the five primary institutions, this study centers around those of education, economy and government.

1.4.1. Government

Political and governmental institutions are the ultimate source of legitimate power in a social system; they are the societal arrangements for enacting and enforcing laws, protecting public health and welfare, distributing public funds and levying taxes; they offer the people of a nation-state a sense of common identity, social cohesion and a center of devotion for ethnocentric attitudes.¹²

Since the political institutions of a nation-state are vested with ultimate legislative power for control of its natural resources, they reflect to some degree a culture's basic desires through the enactment of legislation and establishment of policies.

Legislation and policies in themselves do not necessarily indicate that the goals will be achieved. For example, many lands in the developing world have enacted legislation for forest reservations, but too often no provision is made for enforcement of the mandates.⁵ Consequently, establishing forest statutes must also be concomitant with an adequate forestry program. In both the United States and Germany, it is obvious that appropriate means have been established for carrying out governmental laws and policies through their sophisticated forestry systems.

1.4.2. Education

Education has the universal function of perpetuating a society, transmitting its ideas and knowledge from generation to generation. Education is a reflection of the culture itself, displaying value conflicts between real and ideal norms typical of all cultures. Social change is an inevitable characteristic of all societies, but particularly in modern societies education not only transmits accumulated wisdom of the past; it also adds new **knowledge** to aid in selection as to what should be retained or reevaluated from tradition. The functions of education are complementary and sometimes conflicting as in those of preservation or innovation.¹² Although there are some differences in the educational systems of the United States and Germany, the basic institutional structure is the same.

Compositions of the forestry curricula display a high degree of uniformity in general forestry subject matter with requirements for basic courses in mathematics, physics, chemistry, botany, zoology, economics, soils, geology, surveying and meteorology followed by forestry courses in silviculture, forest mensuration, logging, wood utilization and forest economics, protection, entomology, pathology and management. Programs in both countries require four years for completion.¹¹

1.4.3. Economic System

Means of producing and distributing goods and services are accomplished through the economic system of a society. Systems vary widely and usually develop by

custom and necessity rather than by stated economic philosophies. Yet a close relationship exists between economic systems and other aspects of a culture.¹²

This relationship is so intermeshed that, for the sake of continuity, economic factors are treated in association with other elements in this report.

The economies of both countries in question are based on the capitalistic system and free enterprise under government regulation. Although it can generally be said that government exercises more control in Germany than in the United States, there is strict adherence to the profit/cost margin in both nations.

1.4.4. Land Tenure System

The pattern of landownership developed by a society is highly significant for forest resource management in that the degree of control that can be exercised by other institutions of society is affected. In contrast to having direct control over public lands, in essence belonging to the society, private property management in democracies is dependent on the will of the owner. Without infringing on the property rights of the individual owner, society's control over the use of private property must rely mainly on incentives and subsidies.

Concepts of land ownership in the United States were already firmly established in colonial times, evolving nearly everywhere into the concept of fee simple ownership - the land was absolute property of its owner, to be utilized as he wished without interference from others, including the government.³

The first half of the 19th century saw the United States expand its territory immensely. Acquisition of this vast territory initiated a history of federal lands which continue to the present time.

Finding itself in a situation where it had too much land and insufficient money in the treasury, a philosophy evolved in the United States at the time of independence and continued for the following 100 years as one of disposing the vast domain by selling the land to settlers. This process of land disposal, for better or worse, dominated early American history and saw two-thirds of all the land in the 48 conterminous states transfer from public domain to chiefly private ownership (table 1).

TABLE 1
LAND OWNERSHIP IN THE UNITED STATES AND GERMANY

	U.S. (%)	FRG ¹ (%)
Private land ²	58.3	60
Indian land ³	2.2	-
Public land	39.5	40
Federal	33.7	-
State	5.0	-
County and municipal	0.8	-
	100.0	100.0

Sources: FRG - Statistisches Bundesamt. 1973. Statistisches Jahrbuch für die Bundesrepublik Deutschland. Verlag W. Kohlhammer, Stuttgart.
U.S. - U.S. Bureau of Census. 1972. Statistical Abstract of the United States, USGPO, Washington, D.C.

¹ No ownership data available; estimated from land use data.

² Owned by individuals, partnerships and corporations.

³ Trust land held by tribes and individual owners.

A thorough discussion of the development of land ownership in Germany is beyond the scope of this report. Suffice it to say that, with 2000 years of human occupancy and the western idea of property rights evolving in Europe, the surface area of Germany has passed through the hands of kings, princes, other nations and the commons, finally resulting in a private/public system of ownership similar to that shown in table 1.

Land ownership data for Germany had to be estimated from land use information. Personal communication with the Federal Statistic Office revealed that no land ownership data existed for the Federal Republic of Germany at this time. But by assuming that the major portion of agricultural lands, covering some 60 percent of the country, are in private ownership and that an additional 10 percent plus of the surface area consists of private forest lands, it seems safe to surmise that at least 60 percent of the land in the Federal Republic of Germany is in private holdings.

Of the 40 percent of the land area that would be in public ownership, if one accepts the premise above, the breakdown into federal, state and municipal holdings would probably show a very small percentage in federal, somewhat larger percentage in state and the greatest percentage in municipal or local ownership - an inverse pattern compared to the breakdown of public lands in the United States.

1.4.5. Forestry

As used in this study, forestry is not only considered to be a profession and the science, art and practice,

but also an institution created by society. It provides a mechanism and is a behavior pattern developed within a culture designed to perpetuate the welfare of society and preserve its form. Without a scientific basis and knowledge needed to manage the intricate environmental complex which composes a forest, societal welfare may be degraded or even cause the recession of a society.

Disregard for the values of environmental protection possessed by forests has continued to aggravate already degenerated conditions in many parts of the globe today.^{13, 14} Evidence is substantial that ancient cultures have ceased to exist because of insufficient control of forest resources utilization and deforestation.⁴ In the modern industrial societies such as those found in the United States and Germany, where forestry is well established as an institution, the question is not so much one of perpetuation of the society itself, but more a problem of maintaining and improving the welfare of its people through all the benefits attributed to forests.

1.5. Forest Recreation

Forest recreation is unique in that it may take on many forms, including a product, an activity and an institution. Accepting the definition that an institution consists of an organized behavior pattern or mechanism to perpetuate a society's welfare and maintain its form, then one must concede that forest recreation is indeed an institution, at least in certain societies.

In the United States, for example, the establishment of the National Park System can be viewed as the onset of an organized effort to maintain the welfare of the American public by providing forest areas as "pleasuring grounds" for all the people. Further evidence of institutional development, directed not only at forest recreation but at outdoor recreation in general, is manifested in the creation of the Bureau of Outdoor Recreation - the first federal agency to be established principally for recreation purposes and the first to include recreation in its title.

As a product, the forest has always provided an environment suitable for recreation, although it may not have been appreciated or valued as highly in the past as in the more industrialized societies of today. As a science or profession, forest recreation, or outdoor recreation as a whole, remains a field of specialization within or associated with forestry or other natural resources curricula.²

1.6. Forest Resources

Forests produce many goods and services valuable to humanity - wood and other vegetative products; wild and domestic animal products; soil, wind and watershed protection; and a suitable recreation environment. Most forests are capable of producing a number of these benefits simultaneously, although they are not all particularly generated on any given area at the same time.¹⁷

A prominent characteristic of forests is the long interval required to generate the output of most benefits: Twenty years or more than a century are required to

produce a tree for commercial utilization; impacts of forest cover removal on watersheds and soil stabilization may occur and manifest themselves in a short period of time, but restoration of landscape values after improper management may necessitate human generations in time to accomplish; and production activities may span generations or lifetimes of operators so that values of potential benefits must be projected far into the future.¹⁷

These inherent qualities of the forest make it different from other resources. If it were minor resource, special consideration would not necessarily be justified, but forests cover approximately one third of the land area of the world; their product values have major roles in national and international economics; they have vital significance in the environmental welfare of world society; and they are the globe's largest self-perpetuating terrestrial ecosystem.^{5, 15}

1.7. Mechanics of the Forestry Ideology Model

The basic institutional elements, forming the region in which the processes for forest policy, education and economic formulation take place, consist of the political, economic and educational institutions. The effectiveness of these institutions in influencing the management of the forest resource base as an entirety depends a great deal on the land tenure system. Forestry, as an institution and a profession is obviously involved in the process area, but as a practice, it also provides the necessary linkage to manage the forest resource in accordance with scientific and social

principles; it is society's means of carrying out the fundamental institutional processes.

As a science, art and practice, forestry provides the means for society to manage its forest resource for the six basic areas of range, wildlife, recreation, timber, watershed and environmental protection. The latter element is rather superficial since all management activities should be designed to include environmental protection. Yet, this has not always been the case in the past; it is therefore included as a necessary element of the means.

Utilization of forest resource base must take into consideration not only the human inputs but also the natural limitations, resulting in the final products a particular forest is capable of supplying, corresponding to the areas of management. Society's goals, therefore, are the proper mix of quantity, quality and type of each product for satisfying its wants. Forest recreation, being but one product or area of management in the total ideological forestry model, must then be taken under scrutiny in conjunction with all other alternative benefits which a forest resource is capable of producing.

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CHAPTER 2

SOCIO-ECONOMIC FEATURES OF THE GERMAN AND AMERICAN SOCIETIES

Major socio-economic factors affecting the demand for outdoor recreation in general are considered as the: Population growth; nature of the overall population; amount and characteristics of leisure; transportation facilities; and income.³ The various elements are treated singly for purposes of comparison, but in actuality a great interrelationship exists among the factors within a particular society. The intent is not to present an in-depth analysis of the socio-economic factors of the two cultures, but rather to derive a reasonable cross-sectional view of the two societies in question to determine comparability.

A word of caution is deemed necessary in conjunction with many of the statistics compiled. Because of the diverse sources of reference material, some of the statistical data is not directly comparable. In such instances, the tables have been duly noted.

2.1. Population Dynamics

Important variables associated with recreation demand are the inherent qualities of the population itself - growth, sex and age distributions, marital status, mobility, geographic distribution and concentration, and overall educational level.

2.1.1. Population Growth

Population growth can manifest itself by local or regional crowding through internal migration from rural to urban areas and from one geographical area to another, or by total growth of a nation's population as a net result of natural birth and death rates, emigration, and immigration.

2.1.1.1. Overpopulation and Recreation

Few people question the necessity for open space in and around cities to provide a minimum "green" area for human occupance. One recommendation has been proposed that 50 square meters of parks, forests, green belts, small gardens and so forth, are needed per person.⁶ Apparently, the average American city is better off in this respect than most European urban areas. For example, it was determined that the green areas in American cities averaged 150 square meters per inhabitant, whereas Paris, London and Vienna had only 7, 15 and 26 square meters respectively.⁶

Cities such as New York, with Central Park, and San Francisco, with the Golden Gate Park, had early inputs for establishing open areas. But recent mass migrations to cities and the resultant urban sprawl has left many areas with insufficient open space for the increased population. Too often forest areas around spreading suburbs continue to be reduced without consideration of open space needed for a suitable urban environment. Through poor planning and control by government agencies that allow building and developing to take precedence over the establishment of even minimum environmental amenities that open space parks can provide, an already deteriorated situation is

only further aggravated.

Where areas have already been reserved for forest recreational purposes in the form of national, state and city parks, the effect of overpopulation is becoming more and more prominent. The ecological carrying capacity of natural areas is limited and the impact of overuse by the trampling feet of thousands of people can have long-lasting and devastating effects. Thus soil compaction caused by visitors passing over the root zones of the Giant Sequoia has subjected these huge trees to damage in the very parks which were established for their protection.⁵ Overcrowding in many other national parks of the United States has necessitated the institution of means of regulating use and dispersing visitors to parks that are utilized to a lesser extent.^{11, 12}

2.1.1.2. Development in the United States and Germany

No attempt has been made here to segregate the grounds for the resultant population growth since the concern lies mainly by the overall growth figure. Both countries have experienced periods of heavy influxes of immigrants throughout their histories, but especially noteworthy is the 150 year period from 1820 to 1970, when over 45 million people immigrated to the United States, most of this number arriving through the decades at the turn of the century, accounting for the large average annual increase in population in the United States up to 1930 (table 2).¹³

Although vast differences in geographical size existed between the two nations, the United States and the

TABLE 2
POPULATION GROWTH IN THE FEDERAL REPUBLIC OF GERMANY
AND THE UNITED STATES

year	Germany ¹			United States ²		
	popu- lation (mils)	density (persons per km ²)	average annual increase (%)	popu- lation (mils)	density (persons per km ²)	average annual increase (%)
1840	17.0	68	-	17.1	4	-
1880	22.8	92	.9	50.2	7	4.8
1900	29.8	120	1.5	76.0	10	2.6
1930	40.3	162	1.2	122.8	16	2.1
1950	50.2	201	1.2	150.7	20	1.1
1960	55.4	223	1.0	178.5	23	1.8
1970	60.7	244	1.0	202.1	26	1.3

Sources: FRG - Statistisches Bundesamt/Wiesbaden. 1973.
Statistisches Jahrbuch für die Bundes-
republik Deutschland. Verlag W. Kohlhammer
GmbH, Stuttgart;
US - U.S. Bureau of the Census. 1972. Statistical
Abstract of the United States. USGPO,
Washington, D.C.

¹ Data for present area of Federal Republic of Germany.

² Data for 48 conterminous states.

the present area occupied by West Germany had about an equal population number in 1840. In the next 90 years there was over a sevenfold increase in population in the United States, whereas the area now occupied by West Germany had somewhat less than a threefold increase. Much of this disparity can be attributed to the mass migration to the United States which occurred throughout this period. Subsequent to this period, average annual population growths in both countries began to take a comparable trend.

In recent years Germany has actually experienced intervals of a negative natural population growth rate. Yet it has continued to have about a one percent overall growth increase caused primarily by immigrants from other European countries who have taken advantage of the labor shortage prevalent in Germany. In the mid-70's, the number of foreigners totalled 2.4 million or about 4 percent of the total population, and it is expected that many of the aliens will eventually settle permanently in Germany, as has been the case in Switzerland.⁴

Still, even with a more rapid population growth in the United States, the overall density remains about ten times less than that of Germany, the third most densely populated country in Western Europe - Holland and Belgium ranking first and second most densely populated countries respectively.

The fact that Germany is ten times more densely populated than the United States and yet apparently provides sufficient forest recreation opportunities for its people is one of the guiding principles for undertaking this study, because even with recent declines in natural

birth rates in the United States, population growth will continue several generations into the future, creating greater demands for forest recreation resources.

2.1.2. Nature of Populations

In addition to sheer numbers of people, prominent qualities of populations which have significant impacts on the demand for recreation are:

2.1.2.1. Sex and Age Distribution

The age structure of the populations in the United States and the Federal Republic of Germany are quite different as can be seen in table 3. Generally, the entire population of Germany is older than that of the United States. A median age of around 33 years in Germany is in contrast to a median age of about 28 years in the United States. A major effect of a declining death rate has been the emergence of a much larger population segment composed of older persons in both societies.

Life expectancy is very similar in both countries. In 1969, the expected age for men and women in the United States was 67.8 and 75.1 years respectively. In Germany, statistics for 1970 show a life expectancy of 67.2 years for men and 73.4 years for women.⁸

In addition to disparity in the age distribution of the two populations, the proportion of men to women also differs somewhat. Until about the 45 age bracket, the proportions between the sexes remain relatively equal;

TABLE 3

POPULATION OF THE UNITED STATES AND THE FEDERAL REPUBLIC
OF GERMANY ACCORDING TO SEX AND AGE

Age class (years)	Germany (1971)		United States (1970)	
	male (%)	total (%)	male (%)	total (%)
< 5	51.3	7.3	50.9	8.4
5 - 9	51.3	8.3	50.9	9.7
10 - 14	51.3	7.4	50.9	10.2
15 - 19	51.3	6.6	50.8	9.4
20 - 24	51.3	6.6	50.3	8.4
25 - 34	52.3	14.8	49.5	12.3
35 - 44	51.6	13.2	48.9	11.3
45 - 54	42.7	10.8	48.3	11.4
55 - 64	41.7	11.6	47.3	9.1
65 +	38.5	13.4	41.9	9.8

Source: U.S. - Bureau of the Census. 1972. Statistical
Abstract of the United States;

FRG - Statistisches Bundesamt. 1973. Statistisches
Jahrbuch für die Bundesrepublik Deutschland.

however, over 45 years of age, the proportion of women far exceeds that of men especially in Germany, where the trend is expected to continue. While one out of every 13 persons was 70 years of age or older in 1970, by 1985 it is estimated that one of every ten men and of every eight women will fall into the age 70 or above bracket.⁴

2.1.2.2. Marital Status

Since the statistics available for both countries on family status are compiled under a different basis, the figure presented in table 4 must be viewed with caution. As noted, the values for Germany include a younger segment of the population and therefore distort the overall picture. Still it is evident that a greater proportion of Americans enter into matrimony at an earlier age than the Germans.

If compensation is taken into account for the larger segment of the younger population included in the figure for Germany, for all practical purposes the family status in both countries are quite similar.

2.1.2.3. Mobility

Major geographical shifts in population can take on two aspects: A shift from one major geographical area to another within the country and a movement of the population from rural to urban environments.

The total population center in the United States in 1790 was 37 kilometers east of Baltimore, Maryland. Since

TABLE 4
 MARITAL STATUS OF THE POPULATIONS OF THE UNITED
 STATES AND THE FEDERAL REPUBLIC OF GERMANY (Percent)

	Germany ¹	United States ²
SINGLE	22.1	16.8
MARRIED	64.8	70.9
WIDOWED	10.8	8.8
DIVORCED	2.3	3.5
	100.0	100.0

Source: Statistisches Bundesamt. 1973. Statistisches Jahrbuch für die Bundesrepublik Deutschland. International data.

¹ 1970 figures for all persons over 15 years of age.

² 1971 figures for all persons over 18 years of age.

then, the center has moved almost directly westward at an average rate of about 65 kilometers each decade to within around 80 kilometers of St. Louis, Missouri, in 1970¹⁰. This westward shift of the population center is expected to continue into the future.³

Statistics on shift in population among the states of Germany are distorted by influxes of refugees and disruptions caused by the war. However, some insight to the direction of movement is seen by considering the overall growth in populations of the individual states. During the period from 1952 to 1970, Germany as a whole had a 21 percent increase in population, while during the same time the eight states had: Schleswig-Holstein - 2%; Niedersachsen - 5%; Bayern - 15%; Saarland - 17%; Rheinland-Pfalz - 20%; Hessen - 25%; Nordrhein-Westfalen - 28%; and Baden-Württemberg - 35%.⁷ Obviously the shift has been in a generally southwesterly direction, with the greatest increase occurring in Baden-Württemberg.

Perhaps more important socially, economically and for recreation planning has been the rapid shift of population from rural to urban areas. In 1790 the United States was a rural nation with only five percent of the total population living in cities of 2500 or more inhabitants. By 1920, the population was about split between urban and rural places and in 1970, the proportion approximated a 75/25 urban to rural percentage ratio.¹⁰

In addition to variations in the definition of an urban area, comparative statistics for Germany are difficult to derive since the cultural system has been structured somewhat different than the United States for millenia. For example, the farmers, as a rule, were and are located

in small villages rather than on the farm land itself, a system which has been handed down from the feudal era. Yet, some idea of the state of urbanization is seen in the figures for 1972, where only 19 percent of the total population of Germany lived in communities of 3000 or less inhabitants.⁸ These figures would correlate quite well with those of Tamms and Wortmann,⁹ showing the percentage of the total population living in cities as 70 percent in 1940 and 77 percent in 1961.

2.1.2.4. Geographic Distribution

Population distributions can be viewed from various perspectives. For comparative purposes here, it was deemed more suitable to approach the distribution patterns from the standpoint of concentration and also on a regional distribution basis.

Both countries show areas of population concentrations from the effects of urbanization (figures 2 and 3). When viewed from the proportion of the total population to total land area, the distribution picture can appear quite diverse. For example, 55 percent of the total population of Germany is found on 17 percent of its area; 62 percent of the population of the United States occurs on about 8 percent of its area.^{2, 9} These figures are highly subjective, varying according to how the statistics are derived in reference to urban areas; however, they do show to some degree the overall population concentration.

In Germany, the heaviest points of concentration are found in the Rhein-Ruhr, Rhein-Main and Rhein-Neckar areas, or mainly in the west-central portion of the nation. Even with the major cities of Hamburg, Bremen

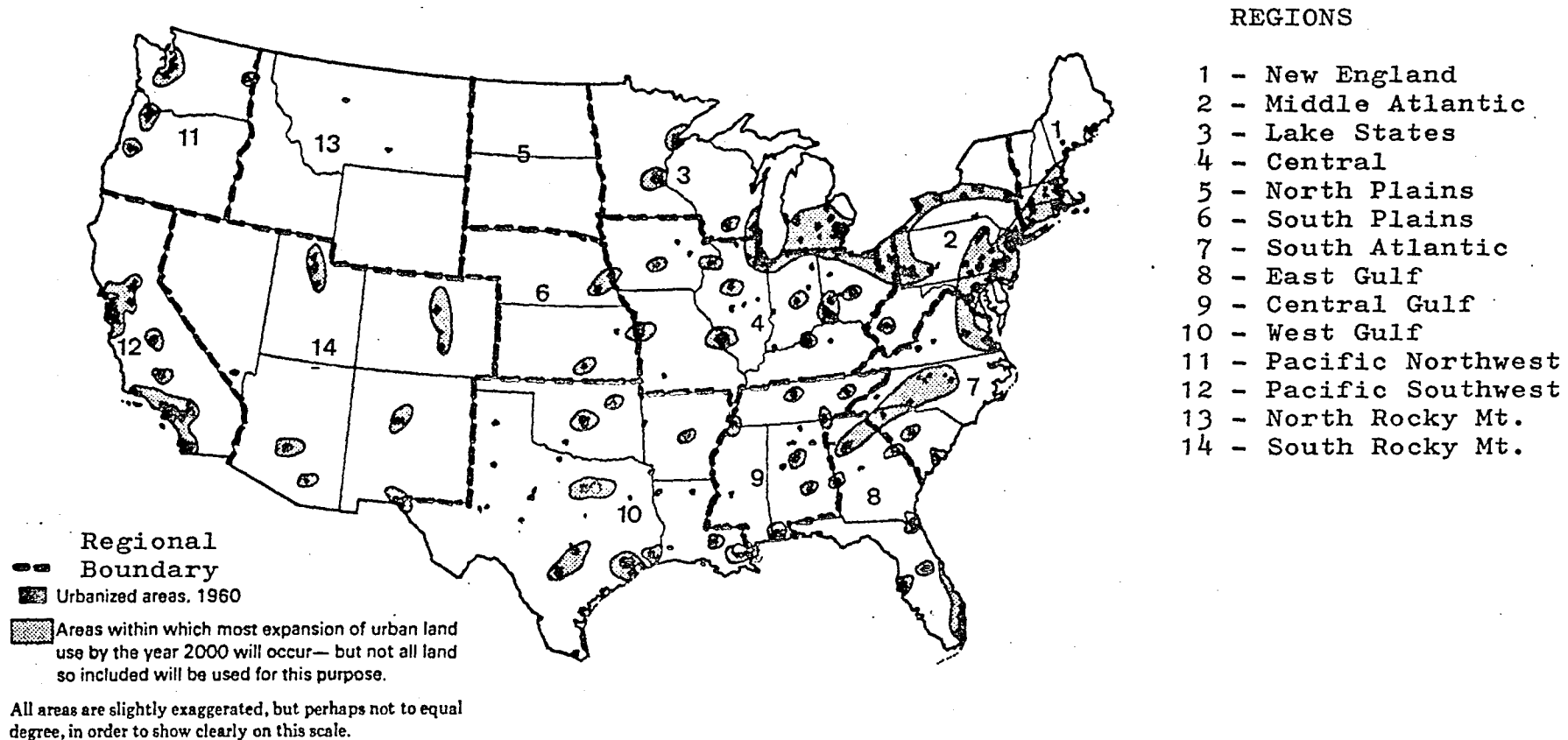


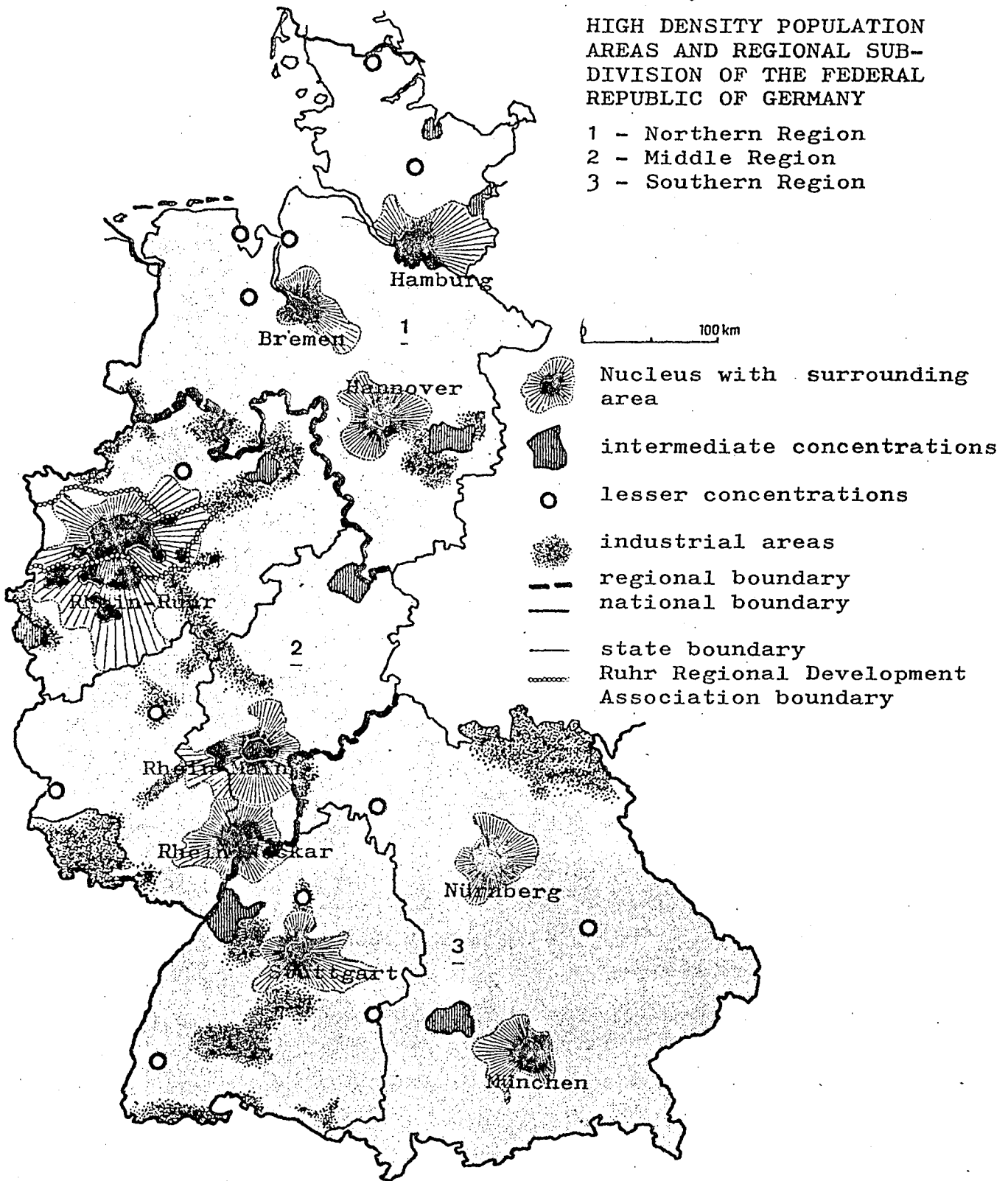
FIGURE 2 HIGH DENSITY POPULATION AREAS AND REGIONAL SUBDIVISION OF THE UNITED STATES

Source: Adapted from: Clawson, M. 1972. America's Land and its Uses. Johns Hopkins Press, Baltimore.

FIGURE 3

HIGH DENSITY POPULATION
AREAS AND REGIONAL SUB-
DIVISION OF THE FEDERAL
REPUBLIC OF GERMANY

- 1 - Northern Region
2 - Middle Region
3 - Southern Region



Source: Adapted from: Tamms, F. and W. Wortmann. 1973.
Städtebau. Carl Habel Verlag, Darmstadt.

and Hannover included within the northern region and Stuttgart, Munich, Nürnberg and portion of the Rhein-Neckar area occurring in the southern region, these two regions have only about half the population density as the Middle Region, where 45 percent of the population is located on 31 percent of the total land area (table 5). Still, from a regional perspective, the variation in population density in Germany is relatively minor as compared to that of the United States.

Population density in the United States varies from two persons per square kilometer in the North Rocky Mountain Region to 74 persons per square kilometer in the New England Region. Together the first four regions compose only 23 percent of the total area, but contain 55 percent of the total population. In contrast thereto, the four least densely populated regions - North and South Plains, North and South Rocky Mountains - comprise 39 percent of the total area, but only 7 percent of the population.

2.1.2.5. Education

Although the data in table 6 are not directly comparable in that the figures for the United States are only for a partial population, the statistics are close enough to assume that educational levels in both countries have negligible differences for purposes here.

2.2. Leisure

The amount of leisure time available to the society as a whole is very difficult to determine, but is generally

TABLE 5
REGIONAL DISTRIBUTION OF POPULATION IN THE UNITED
STATES AND WEST GERMANY

Region *	percent of total population	percent of total land area	persons per km ²
UNITED STATES	100.0	100.0	27
1. New England	5.9	2.1	74
2. Middle Atlantic	21.7	4.6	61
3. Lake States	8.5	6.4	35
4. Central	18.6	10.0	50
5. North Plains	0.6	4.9	3
6. South Plains	1.8	5.3	9
7. South Atlantic	6.1	4.0	41
8. East Gulf	5.7	3.8	40
9. Central Gulf	4.7	4.7	27
10. West Gulf	9.6	14.5	18
11. Pacific Northwest	2.7	5.5	13
12. Pacific Southwest	9.9	5.3	50
13. North Rocky Mt.	0.9	11.0	2
14. South Rocky Mt.	3.3	17.9	5
WEST GERMANY	100.0	100.0	244
1. Northern	19.9	25.8	188
2. Middle	44.6	31.2	349
3. Southern	32.0	42.8	182
- West Berlin	3.5	0.2	4421

Source: See Appendix I

* As keyed to figures 2 and 3

TABLE 6
EDUCATIONAL LEVEL OF POPULATION IN THE UNITED STATES
AND GERMANY
(percent)

	Germany ¹	United States ²
Completion of General Education	64.5	55.2
Completion of Higher Education	8.8	11.0

Source: U.S. - Bureau of the Census. 1972. Statistical Abstracts of the United States;
FRG - Statistisches Bundesamt. 1973. Statistisches Jahrbuch für die Bundesrepublik Deutschland.

¹ For the total population in 1970.

² For all persons 25 years of age and older in 1970.

correlated to amount of work in that a decrease in one usually results in an increase in the other. There is no question that leisure time is on the increase in the United States and Germany, but comparable statistics on average work days and weeks, and vacation and retirement times are especially elusive and can be presented only superficially.

In the United States the average workweek has declined from 60 hours in 1900 to 50 hours in 1920, 40 hours in the 60's to around 37 hours today, a typical workday containing 3 to 6 hours leisure.^{3, 10} With the declining workweek and corresponding shorter workday also came longer paid vacations and earlier retirements: For the total labor force, slightly more than one week paid vacation was the rule in 1959 and has continued to rise in recent years. In 1950 the average man spent six years in retirement and by 2000, it is expected to be nine years.³

For Germany, the trend has been very similar: Average workweeks have declined from 62 hours in 1900 to around 40 to 42 hours today and average free time per day is estimated to be about three hours.^{4, 9} Forty years ago there was a three-day paid vacation for some workers; today, most workers have more than one week, with the amount of free time expected to increase in all categories.¹ All in all, the trends of leisure time have been and are forecasted to be similar in the two countries.

2.3. Income

As can be expected trends in personal income in Germany and the United States are parallel to those of leisure. Being a highly volatile subject and discounting all the associated factors affecting real value of income, from 1965 to 1972 there was a 40 percent increase in the personal annual income for the German and around a 30 percent increase for the American, showing very roughly that the trend of the income situation is much the same in both countries.^{8, 10}

2.4. Transportation Systems

Readily apparent in table 7 are the great differences occurring in all categories. The dissimilarities in air traffic are understandable when the sizes of the two nations are contrasted. Moreover, seen as an integral in the total transportation complex, air travel to participate in forest recreation probably plays a minor role except in specialized situations, such as for winter sports. More important are the auto and rail modes of transport.

Since the American society has been noted for being centered around the auto as a basic means of transportation, it is not surprising to find almost twice as many cars per 1000 persons in the United States as in Germany. This is more than compensated by the high volume of train traffic in Germany. With a population less than a third of the United States, Germany's railroads laid behind more than twice the number of passenger-kilometers. Still, an indication of the role of the privately-owned vehicle for traveling is seen

in statistics for Bavaria, where the automobile was utilized by over 40 percent of the participants for vacation travel with destinations within the state; by over 50 percent as the mode of travel for trips to other states; and for over 70 percent of the excursions with objectives outside the Federal Republic.¹

TABLE 7
TRANSPORTATION IN THE UNITED STATES AND THE FEDERAL
REPUBLIC OF GERMANY

Item	U.S.	FRG
Passenger cars/ 1000 persons (1971) ¹	446	253
Rail passenger-kilometers (1970) (billions) ¹	17	37
Civil aviation, air kilometers flown (1970) (billions) ²	4	0.1

Sources: 1 Statistisches Bundesamt. 1973. Statistisches Jahrbuch für die Bundesrepublik Deutschland;

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2.5. Summary

All factors considered, the major quantifiable socio-economic features show the German and American Societies to possess a high degree of similarity. Major differences are found in the natural qualities of the populations - overall population density, geographical distribution and overall age of population. Similar trends are seen in the overall population growth and other socio-economic factors relevant to this study. Although more public transportation oriented, it is quite evident that the personal automobile plays an increasingly significant role for recreation transportation. Except for the major differences noted above, it appears the overall socio-economic features of the two societies are convergent or parallel in nature, laying a basis for the comparative analysis of the remainder of the forestry ideology.

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CHAPTER 3

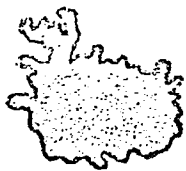
THE PHYSICAL SETTINGS OF THE SOCIETIES

A look at some of the major differences in the physical environments of the societies of the United States and Germany helps to bring the rest of the comparison into perspective. Such features as relative size, climate and topography, and general outdoor recreation resources are factors influencing the type and amount of forest resource available and affecting the diversity of the landscape for recreation opportunities other than those in conjunction with forest environments.

3.1. Relative Size

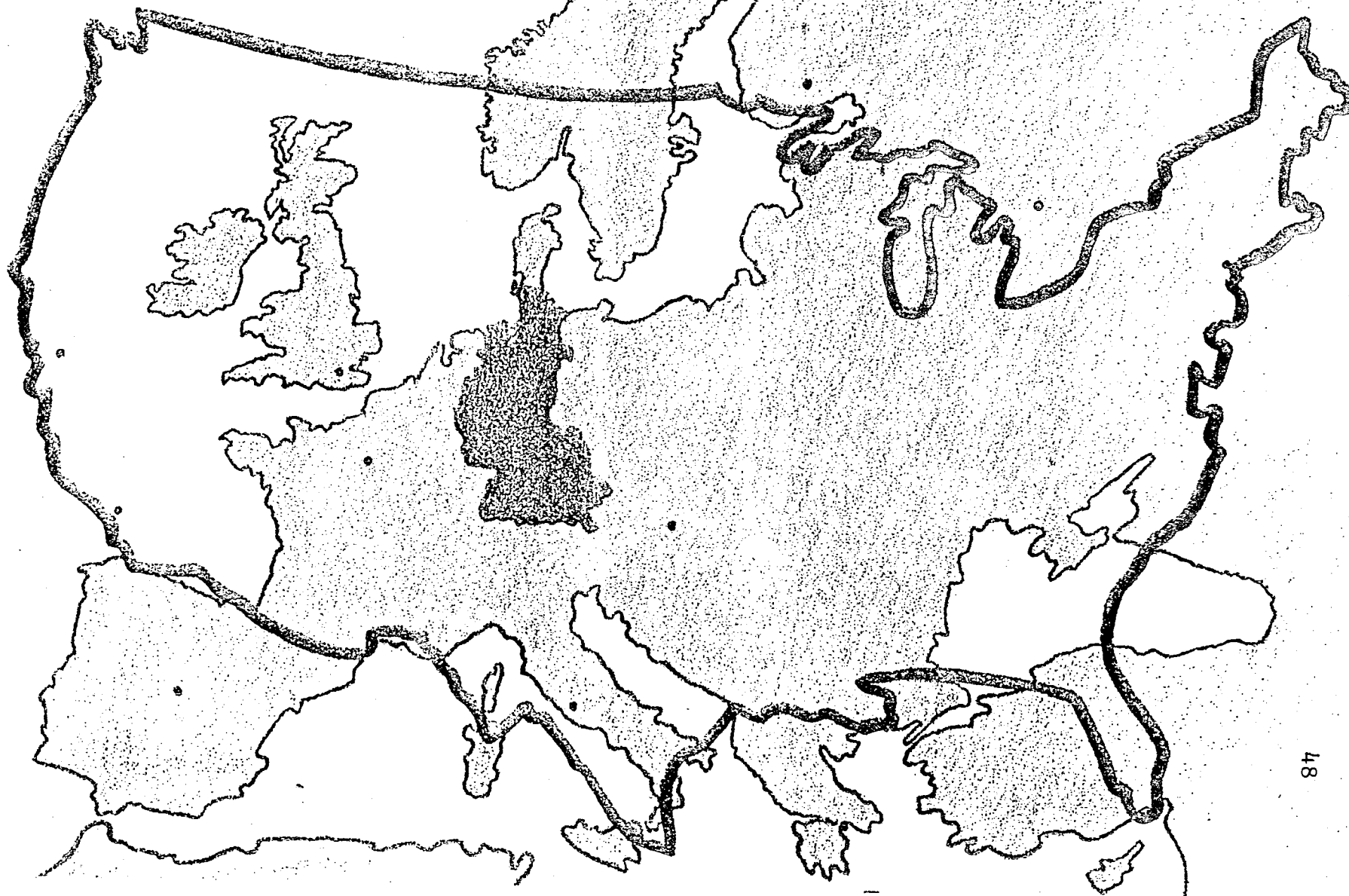
One of the most prominent differences between Germany and the United States is the contrast in size of the physical territory taken in by the two nation-states. This is vividly demonstrated by superimposing an outline of the United States on a map of Europe, both of which are of equal scale (figure 4). It is obvious that, when speaking of the Federal Republic of Germany, a relatively small land area is involved as compared to that of the United States. Although this size difference affects the amount of total forest resource, the quantity of forest per person still depends on the respective population density.

Diversity in the resource would also tend to be correlated to the size of the territory covered. If an area the size of the United States were taken under consideration in Europe, similar climatic conditions would be



SCALE
1:20 000 000

FIGURE 4 - RELATIVE SIZES OF THE
UNITED STATES, EUROPE, WEST GERMANY



found there as in the United States and, consequently, a greater diversity in the outdoor recreation resources. However, taking all of Europe as an entity would involve a large number of diverse cultures, making a comparison of forestry ideologies impractical for purposes here.

The 48 conterminous United States comprise an area about three-fourths that of continental Europe, including European Russia. The Federal Republic of Germany encompasses an area somewhat smaller than the State of Colorado, or a little over three percent of the area of the United States.

Alaska and Hawaii are not considered in this study for several reasons: Both are relatively remote from the other 48 contiguous states; Hawaii is more renowned for its recreation benefits other than those provided by the forest environment; and Alaska's forest resources, although extensive, can be seen more in the light as future forest recreation potential.⁷ In addition to these factors, together the two states comprise only about one percent of the total U.S. population. Unless otherwise indicated, when referring to the United States throughout this report, it is in reference to the 48 conterminous states.

Inaccessibility of data, a significantly different political system and basically an entirely other culture of East Germany prohibits its consideration in conjunction with West Germany. Since it is a special case in itself, West Berlin has been included in much of the data as a separate entity.

The size disparity of the United States and West Germany undoubtedly influences their respective culture, society and consequently the character of forest recreation. Still, size variance, although a constraint, should not preclude a comparison; very few national entities are equal in area and in this case, the overriding feature is the society's value system in relation to its forest recreation resources. Therefore, the size differential of the two countries must be accepted as an intrinsic constituent of the comparison and taken into consideration, but should not be of prohibitive significance.

3.2. Physiography and Climate

Even with quite a contrast in size, many similar natural features are common to the two countries. Both have extensive coastal waters, are endowed with major natural waterways and have variegated topography which offer variation in outdoor recreation possibilities, but the extensiveness of the United States presents greater diversity in practically all areas of the geographic and climatic situation.

3.2.1. West Germany^{4, 5, 9}

The country of West Germany can be divided into four major physiographic regions - the North German Plain, Middle German Mountain Region, the Alp Foothills and the German Alps (figure 5). The broad coastal plain is a continuation of the lowlands of the Benelux countries. In the Middle German Mountain Region the terrain is hilly and mountainous, with peaks rising to 1142 meters above sea level in the Harz mountains on the

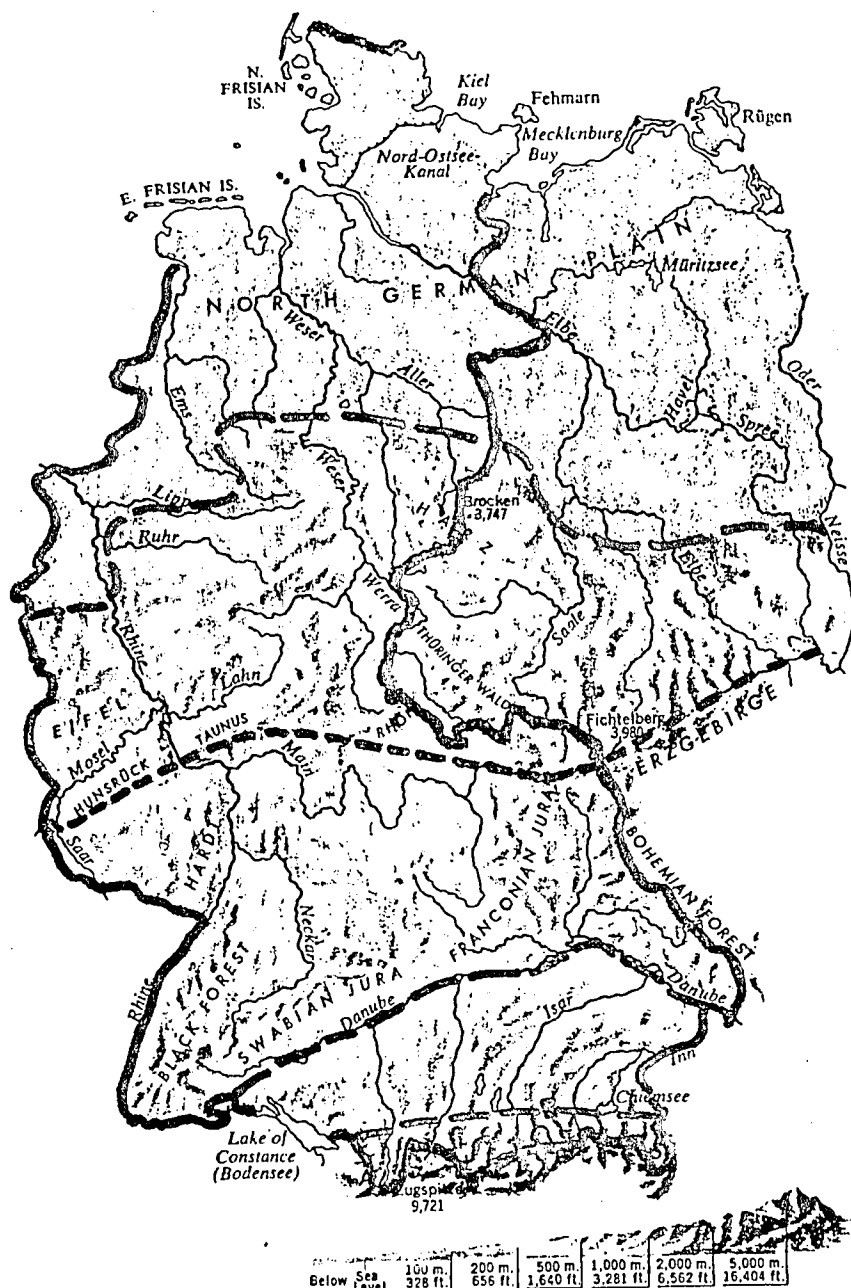


FIGURE 5
PHYSIOGRAPHY OF GERMANY

Scale: 1 cm = 20 kilometers

- West Germany
- Physiographic Region
- Middle German Mountain Ridge

Sources: Hammond Ambassador World Atlas. 1966. Hammond Incorporated, Maplewood, N.J., and Geyer, E., Pieske, G. and P. Schneider. 1970. Seydlitz für Realschulen, Bd. 1, Deutschland. Ferdinand Hirt, Kiel and Hermann Schroedel Verlag, Hannover.

East-West Germany border and to 1492 meters in the Black Forest. Characteristic of the Alp Foothills Region is the gently rolling hills with a prominent dairy industry. The summit of the Zugspitze - Germany's highest mountain - reaches to 2962 meters on the German-Austrian border.

Though situated on a latitude north of that of the United States, Germany has a far more moderate climate than the geographical location would indicate, primarily because of the influence of the Gulf Stream currents which give the country as a whole a cool, humid climate. Annual precipitation is well distributed, ranging in the North German Plain from 600 to 1000 millimeters and varying in the Middle Mountain, Alp and Alp Foothills Regions from 500 millimeters in some valleys to over 2000 millimeters in the higher elevations of the Harz, Black Forest and Alp Mountains.

January temperatures range from plus 2 degrees in the lowlands to minus 8 degrees Centigrade in higher elevations; July temperatures for the greater portion of Germany range from 16 to 18 degrees Centigrade, the exceptions being in the higher mountains. Average temperature for January and July are minus 1 degree and plus 17 degrees respectively, giving an average yearly temperature of around plus 9 degrees Centigrade.

3.2.2. The United States^{8, 10, 16}

The relative size of the United States allows room for far more extreme natural environmental conditions than those found in Germany, particularly in climate. As far as topography is concerned, similar regions are to be found in the United States as in Germany (figure 6).

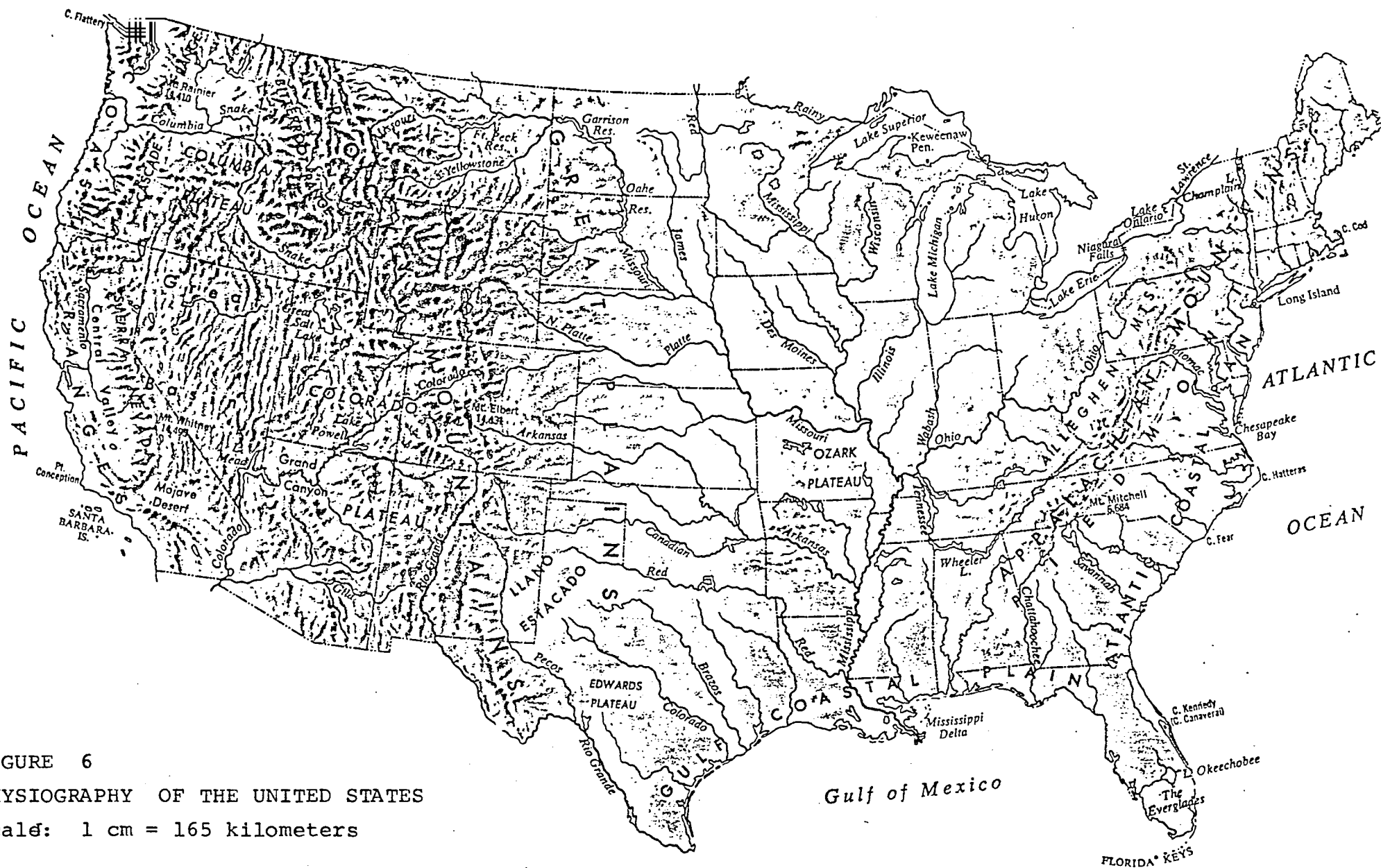
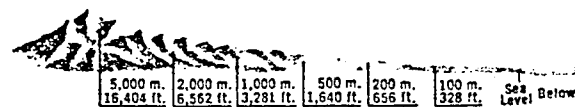


FIGURE 6
 PHYSIOGRAPHY OF THE UNITED STATES
 Scale: 1 cm = 165 kilometers

Source: Hammond Ambassador World Atlas. 1966.
 Hammond Incorporated, Maplewood, N.J.



The Atlantic and Gulf Coastal Plain could be likened to the northern lowland region of Germany; interior highlands of the Ozarks and the Appalachian Mountain Region have much in common with the topography of the hills and mountains of the Middle Mountain Region of Germany; and the Rocky Mountains and West Coast Ranges would possess landscapes comparable to those of the Alp and Alp Foothills Regions. The highest elevation in the 48 conterminous states - Mt Whitney, 4420 meters - exceeds that of the Zugspitze by almost 1500 meters. Death Valley, with an elevation of 86 meters below sea level, is also unique to the United States.

Physiographic regions of the United States not found in Germany are such features as the Mojave Desert, the semi-arid areas of the Southwest, Great Basin and Columbia Plateau, and conditions prevalent in the Great Plains.

The climate situation in the United States is also in contrast to that of Germany. Whereas the climate in the northeastern United States is possibly most descriptive of that of Germany the rest of the country shows a high degree of variation in climate, ranging from subtropical to bordering on subpolar. Precipitation may vary from the meager amount of 125 millimeters coming down in a single cloudburst as in the Mojave - Gila Desert, to the well-distributed 3750 millimeters of annual rainfall occurring in the Olympic Mountains of the Northwest - the maximum for the United States. Temperatures can range from 55 degrees Centigrade in Death Valley to below minus 50 degrees Centigrade in the Northern Great Plains.

3.3. Outdoor Recreation Resources

The total recreation resource base for Germany and the United States amounts to around 248,000 and 7,828,000 square kilometers respectively, of which about 98 percent is land in both countries. Outdoor recreation resources in respect to the total environment can take on many forms and aspects. The usual tendency is to view the total resources for recreation in accordance with land use classification. According to table 8, land use is similar in the United States and Germany. However, recreation can often occur in conjunction with all these resource uses, at least on a temporary basis. Thus, practically the entire land and water resources of a country could serve as recreation resources at one time or another.

For instance, many designated agricultural lands are an important recreation resource for hunting or aesthetic appeal and most water resources serve as fishing areas, even though the primary uses of these resources may be considered as food and water supply. Therefore, the question of recreation resources centers more around those physical features of a geographical area that adapt themselves to dominant use for recreation purposes, keeping in mind that outdoor recreation opportunities are often available in association with other resource utilization patterns.

For purposes here, the total national resources are segregated according to the two broad classifications of water-based and land-based recreation resources. Although much overlapping also occurs in this approach, it does permit a simple categorization for a brief look at the total recreation resources available to each society.

TABLE 8
LAND UTILIZATION IN THE UNITED STATES AND THE
FEDERAL REPUBLIC OF GERMANY

Land Use	United States ¹ (%)	West Germany (%)
Total Land Area	100	100
Cropland	23	33
Pasture and Grazing	34	24
Forest and Woodland	33	29
Other ²	10	14

Sources: US - U.S. Bureau of the Census. 1972. Statistical Abstract of the United States and Clawson, Marion. 1972. America's Land and its Uses;
FRG - Statistisches Bundesamt. 1973. Statistisches Jahrbuch für die Bundesrepublik Deutschland and Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967. Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland.

¹ 48 conterminous states.

² Includes unproductive, urban, industrial, infrastructure lands, etc.

3.3.1. Water Resources

That bodies of water play an important role in outdoor recreation in the United States is shown in the estimate that about a quarter of all recreation activity is dependent on water and that approximately two-thirds of all public administered recreation areas in the United States are associated with water resources.¹⁴

In Germany, water resources of every form are considered as focal points for outdoor recreation activities in and around forest environments.¹⁷ Results of one survey conducted at various areas in the Black Forest showed that from 80 to over 90 percent of those interviewed expressed an affinity for lakes and ponds.¹⁸

In the United States, water resources comprise long Great Lake shores, the Pacific and Atlantic coastlines, inland rivers and streams, and a system of inland artificial and natural lakes. The nation's ocean and Great Lake shorelines total 136,000 kilometers, over 660 meters of shoreline per 1000 population; Inland rivers and streams provide another 4.8 million kilometers of recreation resources for water-based activities.¹⁴

In addition to the shoreline recreation resources, the actual water surface areas are an important component for providing for recreation activities. The five Great Lakes have a combined surface of over 245,000 square kilometers, of which 157,000 square kilometers are in the United States. Over 150 fresh water lakes with a surface area of 26 square kilometers or more are also available to the population as a recreation resource. Moreover, there are a number of recreationally significant natural saline lakes, the largest and best known

being the Great Salt Lake in Utah which has a surface area of around 2600 square kilometers. Although not all at the disposal of recreation activities, there are some 1500 major reservoirs, 3000 watershed protection and flood prevention reservoirs, and an estimated 1.5 million farm ponds that provide further water-based recreation opportunities in the United States.¹⁴

West Germany has about 1000 kilometers of coastline on the North and Baltic Seas and approximately 100 kilometers of shoreline for a total of about 18 meters of shoreline per 1000 persons on Lake Constance. Estimates for total river and stream distances were not available, but major waterways alone comprise over 6000 kilometers. An extensive canal system of almost 1000 kilometers provides some additional water resources for recreation in conjunction with commercial uses.⁹

Major reservoirs compose over 116 square kilometers of water surface and natural lakes, mainly in the southern portion of the country, provide an additional water surface area for recreation in excess of 700 square kilometers.⁹ Numerous small bodies of water created by gravel extraction operations, particularly in the upper Rhine region, also contribute greatly to the water-based recreation opportunities.

3.3.2. Land Resources

As mentioned earlier, outdoor recreation resources can take on many forms, from the aesthetic appeal of such cultural sights of urban skylines to an individual's

physical presence in a wilderness area. But generally recreation resources are considered to be those elements of the environment that can be designated as dominant use for outdoor recreation opportunities. Physical features of the national landscape which frequently fall under consideration are: Islands; wetlands; historic areas; caves; forests; and other major ecosystems.¹⁴

3.3.2.1. Islands

The 48 conterminous states of the United States include some 20,000 islands of four or more hectares in area, comprising a total area of around three million hectares. Little, if any, development has occurred on many of these islands and represent a potentially excellent, high quality outdoor recreation resource base.¹⁴

Major islands of Germany along the Baltic and North Sea coasts, and some inland islands in the southern part of the country together compose an area of about 238,000 hectares.⁹ Many of these islands are composed of wetlands; those feasible for development have already become major tourist attractions, such as Helgoland on the North Sea coast.

3.3.2.2. Wetlands

Wetlands, as ecologists define them, are areas in which there is no clear delineation between land and water - areas such as swamps, bogs, marshes or tidal flats. It has been estimated that some 51 million hectares of wetlands existed in the United States when Columbus

arrived in the western hemisphere. By the mid-50's, the area had decreased to about 30 million hectares and today, the area of wetlands has dwindled to less than half - 24 million hectares - of that at the beginning of the country's history, representing about 3 percent of the total area of the 48 states.^{3, 14} Wetlands have only been superficially exploited for recreation in the past, primarily for waterfowl management, but provide a tremendous variety of recreational opportunities.

Reclamation and development activity, that is presently decimating wetlands in the United States, has already greatly decreased the area of wetlands in Germany. The upper Rhine River Basin has been largely drained; most wetlands remain along the northern coastal waters and today, less than one percent of the area of Germany is considered to fall in the wetland category.⁹

3.3.2.3. Historic Areas

Natural and cultural features pertinent to the historical development of the nation have taken a new significance in both the United States and Germany recently as interest increases for preserving the natural and national heritage. At the same time, these historical landmarks become major attractions for outdoor recreation.

In the United States the National Park System is renowned for its natural landscape and inception of the National Park concept. But the National Park Service administers 178 historical areas under various categories, in addition to the 38 national parks, 42 recreation areas and other types of areas, totalling 298 with an area

of 12 million hectares.¹² Efforts are underway to further "protect and exhibit the best examples" of national landscapes and water areas, processes which formed them, life communities that dwell therein and other historical landmarks.¹³ Other levels of government have also become involved in evaluating the historic assets of the nation with nearly 1000 areas having been declared eligible for inclusion in a National Historic and Natural Landmark program.

Complete national data for Germany's tremendous historic resources was not available at this writing. Many ruins of castles and fortresses have been lost with time, but estimates put the figure well over 2000 such cultural features still existing. Some consist of only a few stone remnants; others have been preserved in nearly original condition. In addition to the array of landmarks remaining from the era of kings and princes, Germany is rich in cathedrals and churches. Features of such areas as the Lüneburger Heide and other areas of natural and historical significance have been and continue to be designated as protected areas to preserve the national heritage under the nature preservation system.

Since the enactment of the "Reichsnaturschutzgesetz" in 1935 to protect plants, non-game animals, natural monuments and special landscapes, 898 nature and over 6000 landscape protection areas have been established, comprising over 14 percent of the total area of Germany. In addition, over 40,000 natural Monuments have been registered under the law.^{2, 6}

3.3.2.4. Caves

Of the 12,000 plus caves in the United States, over 200 public and private caves are open to the public. Many are in established recreation areas while others are the primary attraction for complementary facilities.¹⁴

Although various caves are available in Germany, a specific number is not known. Old salt mines in south-eastern Germany and in the Black Forest region are known to be open for public viewing and are major attractions. Also, in the limestone region of the Franconian Jura (figure 5) over 50 major caves are available for visitation.⁵

3.3.2.5. Forests

National forests play a major role in outdoor recreation in both countries, covering 33 percent of the land area in the United States and 29 percent of the area of Germany. Since forest recreation is the topic of this study, little discussion of the subject is necessary here, being treated in detail in subsequent chapters.

Because of its size, diverse climate conditions and effects of the glaciation period, far more differentiated natural forest conditions exist in the United States than in Germany. Outstanding examples of natural forests have already been incorporated into park and recreation areas, running the gamut from the coastal redwoods of California and the rain forests of the Pacific Northwest to Joshua trees and petrified relics of the western semi-arid region; the eastern forests of the Appalachian

area, southern pines and hardwoods, swamp forests in the deep south and varied forests of the northern lake states all contribute uniquely to the forest resources of the nation and outdoor recreation opportunities.

Having been subjected to exploitation for two millenia, the forests of Germany have taken on a new character as a result of human activity, in addition to being less diverse than those of the United States under natural conditions. Still, the forests of Germany provide excellent and varied outdoor recreation opportunities for its relatively dense population. Through intensive management, the original forest cover dominated by hardwoods has been replaced by a forest consisting primarily of conifers. Although no "virgin" forest remnants remain in Germany, the capability of the forest to produce a suitable environment for outdoor recreation is not impaired.

3.3.2.6. Other Ecosystems

In addition to the heterogeneous natural forest conditions in the United States, further variegated landscapes are also available for outdoor recreation in the opportunities presented by deserts, semi-arid regions, lava beds, rangelands and prairies. Some examples of these ecosystems have been set aside in various park and natural areas. Ecosystems of this nature comprise most of the 70 million hectares of the remaining public domain in the 48 states which is administered by the Bureau of Land Management.¹¹

Consisting of relatively open country, these ecosystems lend themselves well to the flourishing off-road-re-

creation vehicle (ORRV) segment of the recreating society, which has been estimated to have over 5 million ORRVs in use in the United States.¹⁵ As an advent of technology, the ORRV comes in various forms - tracked snowmobiles, motorcycles, 3 to 6 wheeled all-terrain vehicles and four-wheel drive vehicles - all which are capable of traversing all but the steepest topography. They have also brought with them the problems of noise pollution, environmental damage and competition for space for other less mechanized means of recreation. Since this form of recreation has proliferated rapidly in recent times, effective control of this recreation phenomenon has yet to be developed to prevent overuse of sensitive ecosystems in the United States.¹

Germany is not confronted by the ORRV phase of outdoor recreation since the ecosystems available for this type of recreation in the United States are not found in Germany. To partake of the recreation opportunities offered by such ecosystems as desert, semi-arid areas and prairies, the German recreationist must travel outside his national boundaries to North Africa, and southern and eastern Europe.

Distance-wise, these ecosystems are not any more remote to the German public than for the Americans, as can be seen in figure 4. If one travels the same distance in Europe as is necessary to traverse the United States from the East to the West Coasts, it can be likened to a trip from the northern forests around Moscow, over the steppe landscape of the Ukraine, through the temperate, mixed forests of central Europe, into the

Mediterranean and semi-arid region of southern Europe and to the North African Sahara Desert. Although not physically present within the confines of their societal entity, the German population does have diverse ecosystems at its disposal.

3.4. Summary

As far as the physical settings of the German and American societies are concerned, both offer great diversity in total outdoor recreation opportunities. Even if not present within its political boundary and subject to the whims of other nations, seen from a remoteness standpoint the people of Germany have about the same diversity in physiography available on the European continent as that found in the United States. For a country encompassing a land area only a small fraction of that of the United States, it can be said that Germany is exceptionally well endowed with variable topography, water and land resources, and a favorable climate. Being immensely greater in size, the United States can offer heterogeneous landscapes within its political boundaries, but not necessarily in any lesser distance than available to the German citizen. Although having perhaps more total outdoor recreation resources for its size, Germany has less per capita due to its greater population density. As was the case with the societies themselves, their physical settings are surprisingly similar in character.

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PART II

THE GERMAN AND AMERICAN FORESTRY IDEOLOGIES

In Part I it was determined that the quantifiable aspects of the German and American societies and their total environments are very similar in nature, the dominant exception being the differences in overall population density and relative sizes of the nation-states.

Part II is intended to provide the reader a brief description of the forestry systems in the two countries by implementing the ideological forestry concept as discussed in chapter I. To maintain a degree of continuity, each forestry ideology is first treated individually, a comparative analysis of the two systems following in chapter VI.

CHAPTER 4

THE GERMAN FORESTRY IDEOLOGY

Having experienced human occupance for millennia and being the primary contributor to early scientific forestry, Germany is rich in forestry history. Only extremely abbreviated accounts of the development of German forestry and its associated institutions can be bared here.

4.1. Institutional Framework

In general it can be said that, as a society develops its cognizance of the importance of the forest, the endeavors to maintain and preserve the forest resource in national interest and for posterity are revealed through enactment of forest legislation and establishment of a forestry educational system. Concurrently a system of forest land ownership must prevail to assure retention of an adequate forest cover for the nation.

4.1.1. Forest Legislation

Already in the Middle Ages forests were protected from clearing and exploitation by royal edicts and local ordinances which regulated cutting practices and grazing in the forest. Protective measures were continued through the 18th century by territorial sovereigns. In the 19th century prohibitions and restrictions were largely abolished or liberalized as a result of the influence of the French Revolution and the then current wave of liberal thinking.^{10, 16} Mainly because of the

political development of Germany since the Middle Ages, forestry had been and continues to be primarily a state rather than a federal function.^{4, 9, 17} Such being the case, it is necessary to take account of state as well as federal legislation in Germany.

4.1.1.1. Federal

Centralized forest legislation was first instituted in the early decades of this century. Most of the laws enacted during this period are still in force, the following having become federal laws.^{2, 3}

(1) Promotion of Forestry and Grazing - 1924.
Authorizes the states to enforce forest management and reforestation.

(2) Prohibition of Forest Devastation - 1934.
Bans the harvest of immature conifer stands and correlates the size of clearcuts to the total forest area.

(3) Forest Fire Protection - 1938.
Prohibits the setting of fires in forests, moors and heaths under various circumstances.

(4) Forest Seeds and Plants - 1957.
Issued to assure productive potential and increased yields. Additions to this law (1958) enforces designation and limitations to origin of species; and amended (1966 and 1969) to coincide with EEC directive regarding forest seeds and plants.

(5) Cooperation for Improving the Agricultural Structure and Coastal Protection - 1969. Provides for federal aid to states for: Reforestation of marginal lands; conversion of coppice forests to high forests;

forest road development; mechanization of farm forests; and for furthering forest cooperatives.

(6) Compensation for Natural Catastrophic Damage - 1969. Allows federal assistance to: Stabilize the timber market and prevent a drop of wood prices; and avoid regression of forest management practices due to naturally caused damage to forest.

(7) Formation of Forest Cooperatives and Associations - 1969. Defines purpose and tasks, legality and structure of forestry organizations (amended 1973).

Since 1951 much has been mentioned and several attempts made to introduce a comprehensive federal forest law in Germany. The problem centers around the interpretation of Article 74, paragraph 17, of the Basic Law of Germany referring to "Promotion of Forest Production". On the one hand the federal government has the authority to override state forest laws, but only if it can be shown that a need exists. On the other hand, the federal government may enact any forest legislation not in contradiction to state laws. The sphere of contention has been whether a need exists for a federal forest law.⁵

At present debate is being actively pursued over a proposal for a new forest law which would include provisions for insuring the proper maintenance of the forest and its social benefits, guaranteeing access to the forest for recreationists, increasing efforts to preserve forests in recreation areas and compensating the forest owner for damages and losses incurred by imposing restrictive management practices.^{14, 19} When and if the proposed legislation will become law is speculative.

4.1.1.2. State

Besides federal legislation, some individual states have up-dated or instituted new forest laws while others have adhered to older mandates:

- (1) Nordrhein-Westfalen - 1950, 1969
- (2) Rheinland-Pfalz - 1950, 1971
- (3) Hessen - 1954, 1970
- (4) Niedersachsen - 1961, 1973
- (5) Schleswig-Holstein - 1950, 1971
- (6) Bayern - 1958, 1965
- (7) Baden-Württemberg - 1883, 1902
- (8) Saarland - No forest legislation.

Until 1950, Schleswig-Holstein had no forest law at all; the dire conditions following the war necessitated measures to preserve the little forest remaining in the state. Applicable only to private forests, the law: Requires authorization for forest clearing, clearcut harvests and cutting in protection forests; provided incentives for reforestation; and obligated the owner to manage his forest according to forestry fundamentals. The 1971 law states that public forests particularly should serve for recreation purposes.⁵

Providing for the protection of the forest, the 1950 law in Nordrhein-Westfalen was born out of necessity by similar circumstances as in Schleswig-Holstein and applied only to private forests. In 1969, the law was changed to include all types of ownerships; it also was unique in that it was the first forest law to include public trespass rights on forest lands and allows compensation to the forest owner for losses incurred by providing the welfare benefits of the forest to the public. Claims

under this provision have amounted to over 60,000 German Marks since it went into effect.¹

In Rheinland-Pfalz and Hessen, the comprehensive legislation of 1950 and 1954, respectively, was necessary because these states previously consisted of many smaller sovereign fragments, requiring a uniform forest code. Hessen included a landscape maintenance and land planning segment in its later law.

The 1961 forest law of Niedersachsen pertained to public and corporate forests and is conceded to have been a product of politics, rather than good forestry legislation.⁵ A more comprehensive law was passed in 1973 which provided, among other things, for compensating the forest owner for losses and damage which result from recreation activities.⁷

Bayern, in essence, has kept its old law of 1852, only restating it in modern language in 1965 and leaving much to be desired.⁵

Baden-Württemberg forest laws still date to the 19th century. Composed of two previously independent states, each area still retains its former law. The two laws are so similar that no need has been found to prescribe a new consolidated one. The old legislation was inherently flexible and general, leaving much room for initiative on the part of the forestry administration and forest owner. It is also an indication that legislation alone is not responsible for achieving high standards in forestry.⁵ Presently, however, Baden-Württemberg is in the process of formulating a new forest law, patterned after the proposed federal forest law, to update and standardize portions of the 19th century legislation.¹⁴

4.1.2. Forestry Education

No special education in forestry was promoted in Germany through the Middle Ages and to the second half of the 18th century. Forest activities were based on the practical experience of individuals that were passed on in conjunction with practical training. Usually, as a prerequisite for serving in the capacity of a forester, one had to qualify and show the ability for hunting.⁹

4.1.2.1. Professional Education Development

Around 1750, experienced teachers, some as private undertakings, opened "Meisterschulen" to train forest wardens. The first was established by van Zanthier in 1763 with many more following during the latter decades of the 18th century. During the 19th century "Forstakademien" were founded in Tharandt (1811), Eberswalde (1830), Eisenach (1830) and Hannover-Münden (1868).² By the beginning of the 20th century, the forest academies of northern and eastern Germany were being dissolved or integrated into their respective state universities; forestry schools or faculties in middle and southern Germany were initially located at their universities, the first to offer a forestry program being the University of Freiburg in 1787 under the professorship of J.J. Trunk.¹⁰ Today forestry education is accomplished at the universities of Freiburg, Göttingen and München, all with four-year professional programs.

4.1.2.2. Education of the Public

Beginning with the first elementary grades of public schools, "Wandertage" (hiking days) become an integral

facet of the educational processes in Germany, bringing the students to appreciate the forest and nature in general at an early age and the teacher coordinating these activities with normal classroom presentations. Supplementing the Wandertage and applying the expertise of forest personnel, forest youth games have been a part of nearly all states of Germany since 1970. Usually a one-day affair, participation is from all school levels and for girls as well as boys, with the program based on advice of the formal educators themselves. Activities range from learning the application of forest tools and machines, wood characteristics and timber utilization to wheel barrow races over obstacle courses.^{6, 12}

Prolific nature literature is available to the general public. The role of the forest in today's society is further brought to the public attention through news releases by forest administrators to mass media, the forest agencies sponsoring nature hikes and the distribution of free forest literature to schools, hiking clubs and forest associations.

4.1.3. Forest Land Tenure System

Forest property ownership patterns in Germany can be traced back to the historical developments. In states ruled earlier by powerful princes, state forest ownership is prevalent, encompassing most of the cloister forests that were secularized; private forest ownership dominates in those states, where small land gentry and farmers maintained their independence. The portion of communal forests depends mainly on whether the common forest was put in communal ownership or parcelled into small private holdings according to old German rights

or laws which prevailed around the beginning of the 19th century. During this period there was a trend toward liberalization and individualism, so that frequently large forest ownerships and estate's were subdivided into numerous small holdings.^{5, 10, 16}

These past developments are revealed in table 9, showing the states of Saarland, Niedersachsen and Hessen with a relatively large portion of state forest lands, while Nordrhein-Westfalen has very little forest in state ownership, but a very high percentage of private forest holdings. Corporate forests, normally considered more as public or communal forests, are strongly represented in Rheinland-Pfalz, Hessen, Baden-Württemberg and Saarland.

The three most northern states all have a large proportion of private forest ownership, whereas, with the exception of Bayern, the southern states tend to be dominated by public forest ownership. Noteworthy is the small percentage of forest under federal ownership; with only a total of two percent in federal hands, these forests are usually included with the respective state forest lands and managed by the state forestry agency.

Corporate forests of Germany include not only various legal, public organizational forest, but also municipal and cooperative forests. These corporate forests, comprising about 25 percent of the total forest land, can be further reduced to: Municipal forests, approximately 22 percent; cooperative forests, less than 2 percent; and various corporate forests less than 2 percent.⁵ Consequently, in addition to the state and federal forest lands, the 25 percent corporate forests raises the total proportion of forest in public hands to 56 percent.

TABLE 9
TIMBER LAND OWNERSHIP IN GERMANY ACCORDING TO STATES
1961

State (Land)	Forest Area 1000 ha	Federal Forests %	State For. %	Corp. ¹ For. %	Priv. ² For. %
Schleswig-Holstein	130	3	28	14	55
Niedersachsen	946	4	33	7	56
Nordrhein-Westfalen	761	1	12	19	68
Hessen	809	1	39	37	23
Rheinland-Pfalz	710	1	26	54	19
Baden-Württemberg	1245	1	23	41	35
Bayern	2297	2	32	14	52
Saarland	80	-	45	40	15
City States Hamburg, Bremen, Berlin	11	3	56	1	40
Federal Republic	6989	2	29	25	44

Sources: Hasel, Karl. 1971. *Waldwirtschaft und Umwelt*. Verlag Paul Parey, Hamburg, Table 9, p.52; Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967. *Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland*. Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst, Bonn - Bad Godesberg, p.27.

¹ Includes forests of cities, cooperatives, foundations and corporations.

² Includes forest areas under one-half hectare.

The 44 percent of the forest area in private ownership is spread among over 700,000 owners, having an average sized holding of only four hectares. Over 90 percent of the total number of these private forest owners have holdings of 20 hectares or less, comprising 21 percent of the total forest area in Germany. Not uncommon with these small forest ownerships is to have the holding further splintered into numerous miniscule parcels of a few square meters and completely separate from one another.¹⁷

4.2. German Forestry

As noted earlier, forestry in Germany is primarily a state function with each state having its own policy, administrative organization and management direction guided by its respective forest law. Space does not permit consideration of individual state inferences, but all have basically the same guiding goals and objectives.

4.2.1. Forest Policy^{2, 3}

The principal economic task is to assure a continual supply of forest products for the German economy, with all actions directed at the fulfillment of economic, environmental, cultural and social needs in the most practical way. Environmentally, the forest is seen as a regulator of water supply, protection from soil erosion, avalanches, floods and dune drifting, and an ameliorant of extreme climate conditions. Culturally, the forest is viewed as an element to be maintained and developed to provide spiritual and physical recreation for the people.

Objectives of German forest policy endeavor to maintain forest resources, expand the forest area, if appropriate, and to increase forest yields principally by: Reforestation of clearcut areas; improving degraded soils; afforestation of wastelands and marginal lands; converting coppice forests to high forests; forest access development; land reform measures; joint management of small ownerships; assisting farm-forest owners; cooperating with agricultural agencies in conjunction with non-forest activities; providing a forestry advisory service; and promoting forest research.

4.2.2. Forestry Administration^{2, 3, 4}

The Federal Ministry of Food, Agriculture and Forests is the highest forestry administration body in the Federal Republic of Germany. Its Division of Forestry and Timber is charged with:

- a. programs to increase forest production
- b. furthering forest and timber research
- c. hunting matters
- d. interregional and international affairs for natural reserves
- e. problems of wood processing industries
- f. export of forest products

Importation of timber products is the responsibility of the Ministry of Economics. Questions of tariffs, custom duties and timber prices, as well as international problems such as technical assistance to developing countries or problems with common market implications, are handled by the Division of Forestry and Timber Industries in collaboration with other

affected federal agencies. All other forestry matters are state responsibility, with the Federal Ministry acting in a coordinative capacity.

Individual state ministerial divisions of forestry are in the Agriculture Ministries, except for Saarland, where it is part of the Ministry of Finance and Forests. Most states have a middle level administrative organization, between the ministerial level and local forest offices, which are charged with supervisory and inspection functions (figure 7).

Lower echelon administrative units, the individual "Forstämter" (forestry offices), are not part of the general administrative organization, but are set up according to local forest requirements. The director of a forestry office is generally a university graduate and is responsible for between 2500 to 5000 hectares forest, averaging around 2700 hectares for corporate and 3800 hectares for state forest offices.¹⁵

In all states except Bavaria and Baden-Württemberg, Chambers of Agriculture have been established with forestry departments, supervising the local forest offices primarily responsible for assisting small and medium private forest owners. In Bavaria and Baden-Württemberg the private forest sector is represented by so-called "Einheitsforstämter" (Unit Forest Offices) which administer the private forest through the state forest organization. Community or cloister forest offices are directly responsible to the state supervisory agency the same as the state forest offices.

FIGURE 7

FORESTRY ADMINISTRATIVE ORGANIZATION IN THE FEDERAL REPUBLIC OF GERMANY

Federal Ministry of Food, Agriculture and Forests
(primarily a coordinative agency)

CENTRALIZED
LEVEL

Division of a State Ministry or
a Senate of City-States

INTERMEDIATE
LEVEL

Independent

State Executive
Branch Section

State Executive
Administrative
Department

Public, Legal Corporate
Body (Chamber of Ag.,
Chamber of Cloister,
Ruhrsiedlungsverband)
Parts of:

No Middle Level
Administration

Baden
Württemberg
(Forst-
direktion)
Bavaria
(Oberforst-
direktion)

Hessen
Niedersachsen
Rheinland-
Pfalz

Nordrhein-
Westfalen

Hessen
Niedersachsen
Rheinland-Pfalz
Nordrhein-Westfalen
Schleswig-Holstein

Berlin
Bremen
Hamburg
Saarland
Schleswig-
Holstein

LOCAL
LEVEL

State Forest Office

Community Forest Office
Cloister Forest Office

Chamber of Agriculture
Forest Office

Source: Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967.
Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland.
Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst,
Bonn - Bad Godesberg.

4.2.3. Forest Management

A forest owner in Germany has the obligation to manage his forest holding - not only for personal gain, but also in the common interest of society - so as to increase its productivity and to maintain its soil fertility by proper care and following sustained yield principles.

4.2.3.1. Forest Regulation^{2, 3}

Over three-fourths of the total forest land - government, public corporation and private holdings suitable for individual and sustained management - in Western Germany is under working plans. The remainder of the forest area is in small holdings for which no particular management plan has been developed. No uniform federal management plan is prescribed, but the "Arbeitsgemeinschaft Forsteinrichtung" (Forest Management Working Party) in the Federal Ministry for Food, Agriculture and Forests strives to coordinate individual state management plans as far as the special conditions of the states permit. State management plans are the responsibility of central or intermediate level agencies.

4.2.3.2. Silviculture^{2, 8, 11, 13}

The scientific bases for silviculture were developed during the 18th century by Hartig in Prussia and Cotta in Saxony when they and their students surveyed state, large communal and private forests, organizing them systematically on a sustained yield basis. Many methods of artificial regeneration were developed in the latter

part of the 19th century as forest devastation took place from uncontrolled cutting and grazing, and as the growing demand for industrial wood stimulated the planting of profitable timber species, mainly conifers. By the turn of the century both clearcutting and pure, even-aged stands were being condemned by experienced silviculturists, notably Karl Gayer, whose warnings have since materialized as many of such monocultural conifer stands have experienced declining yields in second and third rotations, susceptibility to wind-fall, insect and disease attacks, and soil podsolization.

Since the beginning of the 20th century, two conflicting views of silviculture have been and continue to be debated. The one theory emphasizes the necessity to treat the forest as a complex biological community which is adapted to its site and in which the individual components depend on the interaction of all; this harmony must be maintained if sustained production is to be fully achieved. This theory advocates only a mixed, uneven-aged forest composed mainly of indigenous species.

The other view is to promote pure, even-aged stands, artificially regenerated from species, hybrids or provenances bred to suit site and management purposes. Soils can be improved by fertilization and subsoil manipulation; disease and insects can be combatted by insecticides, fungicides or biologically.

The question of which system should be furthered in Germany had strong advocates on both sides. However, early failures of monoculture in Germany have shifted emphasis away from hard line conifer plantation forestry and more toward the "Dauerwald" concept - a preference

of natural, mixed forests and more hardwoods. This trend was also supported during the Third Reich when forests were treated more as national heritages rather than cellulose factories, emphasizing aesthetic and recreational values. Yet, today only one percent of the total forest area is under a pure selection system of management.

In any case, natural conditions are taken more in consideration than ever before when planning for regeneration and propagation of high forests, with main silvicultural principles as: No large-scale clearcutting; maintaining a continual soil cover; maximum utilization of the site with vertical graduations of stands and full root penetration; underplanting with tolerant species for soil protection; intensive commercial thinning; careful harvesting; extending road systems; and application of research in genetics and site quality improvement. Silvicultural objectives are designed to assure as high yields as possible of valuable timber and still maintain favorable conditions for the environment.

4.2.3.3. Forest Protection^{2, 3}

Forest fires are not especially destructive in Germany. Forest area burned as a percent of total forest area has not even approached one-tenth of a percent. Stringent regulations prohibiting even the forest owner to light fires and smoke in the forest during critical periods are strictly enforced.

Although chemical and mechanical control of insects and pathogens is common, environmental concerns have promoted research for biological control. Excessive big game

populations are problematic for forest regeneration activities, often necessitating the enclosure of the area by fencing.

4.3. Forest Resource Base

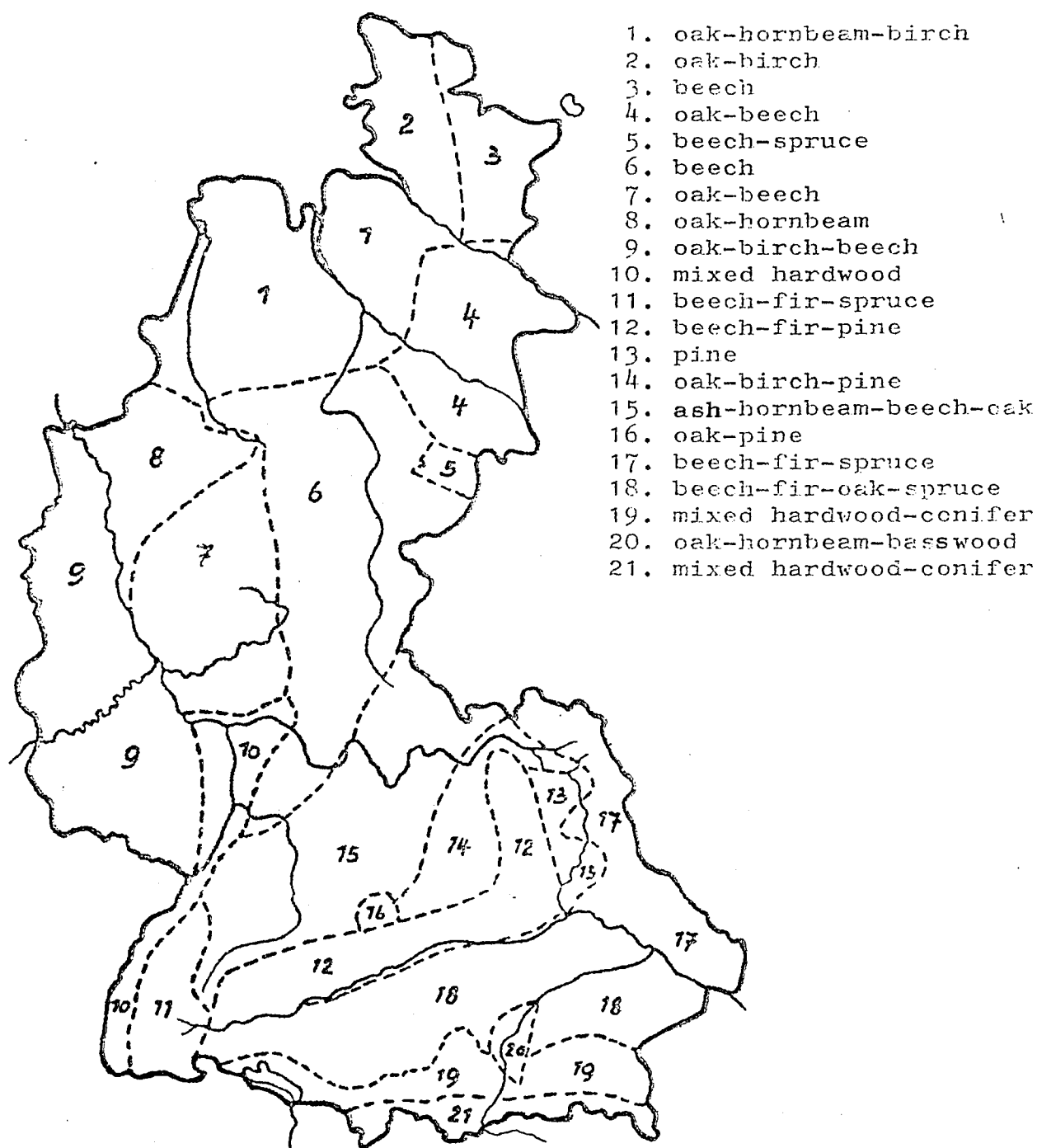
Once covering 90 percent of its present area, today the forests of Germany comprise about 29 percent of the area and have experienced extensive transformation in composition through the ages as the original predominantly hardwood forests have given way to a composition consisting mainly of conifers.¹⁸ Two reasons are advanced for this transition from hardwoods to conifers: The centuries of forest clearing for agricultural purposes for which the soils of the hardwood regions were more suitable; and during the 19th century, economic preference has given to conifers because of their faster growth and superior quality over hardwoods as industrial woods.⁸ As a result of these developments, what was a 70/30 proportion of hardwoods to conifers in the beginning of the 19th century, a complete reversal has taken place in which the ratio now is 30/70 respectively.²

4.3.1. Natural Forest Regions

A glance at the key of figure eight indicates the extensiveness of the former hardwood forests of Germany. The present forest cover has little resemblance to that formerly occupying the area while many of the hardwood forests have been converted to conifer stands. For example, the pine and spruce stands, presently found extensively throughout Regions 6, 7 and 9 are almost exclusively the result of artificial regeneration.

FIGURE 8

NATURAL FOREST REGIONS OF WEST GERMANY



Source: Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967. Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland. Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst, Bonn - Bad Godesberg.

The forest cover for Germany as a whole today is composed of four major types: Oak - 8 percent; beech and other hardwoods - 23 percent; spruce and other conifers - 42 percent; pine and larch - 27 percent. Spruce and pine forests make up well over half the forest area in all states except Saarland where oak and beech types dominate.

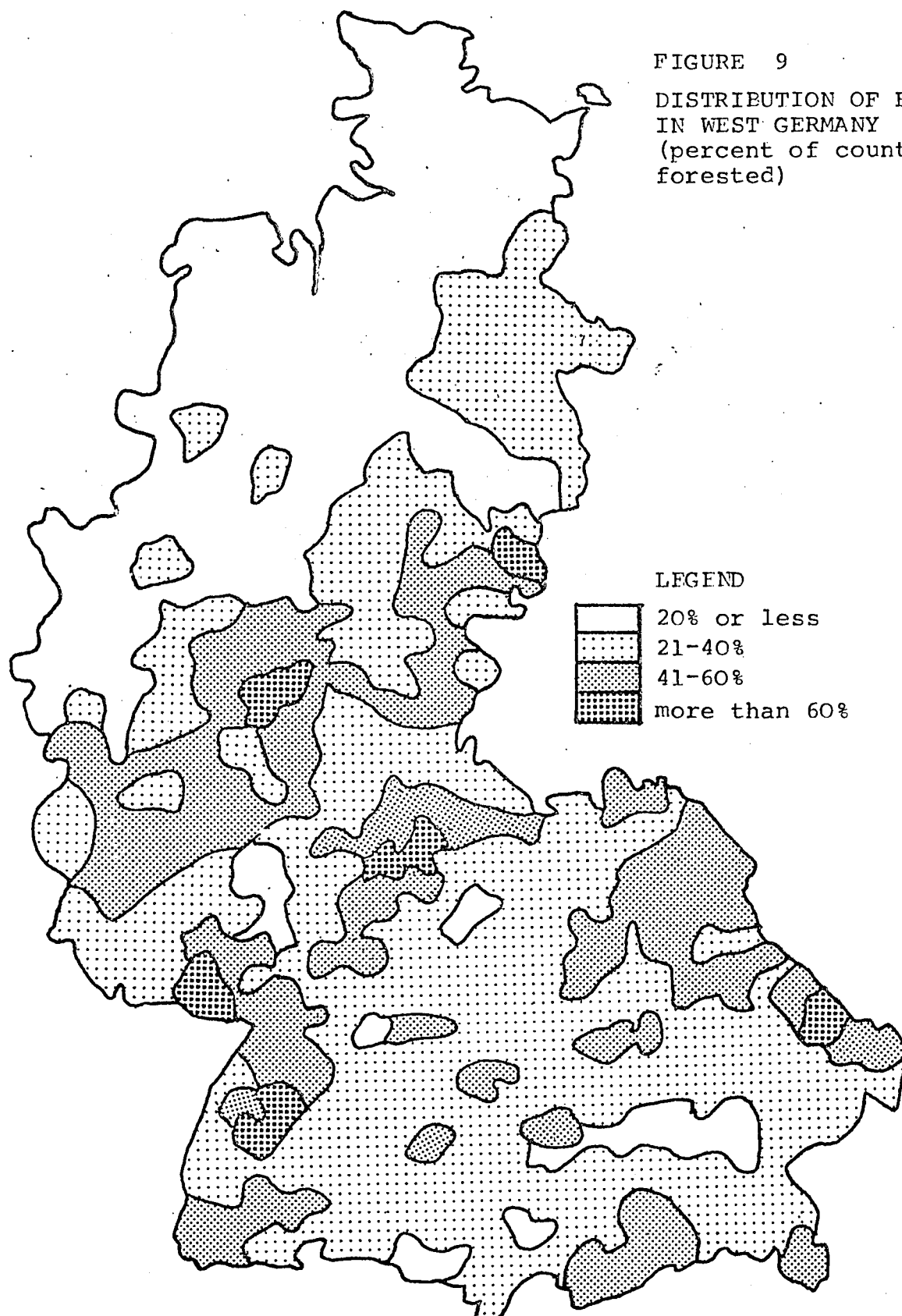
While the widespread natural hardwood forests of Germany have been largely interspersed with conifers over the centuries, the result of this human activity has provided a highly differentiated forest picture. Although the number of species is limited, a variety of forest conditions - old and young growth, conifers and hardwoods - can all be witnessed in a relatively small area.

4.3.2. Forest Resource Distribution

Characteristic for German forests today are the small woodlots, with occasional larger forested areas. While in former times, "Forst" (forest) defined the property of kings or nobility and "Wald" (wood) connoted small ownership, both terms mean the same and are applied interchangeably today.¹⁰ Still, by American standards, the greater percentage of the forested area in Germany is more descriptive under woodlands or woodlot.

Areas most heavily wooded are those where rugged relief and poor soils render the site unsuitable for agriculture - steep alpine slopes below timber line, sandstone plateaus and hills and poor sandy soils. The proportion of land in forests generally increases from north to south, with much of the entire northern coast devoid of trees

FIGURE 9
DISTRIBUTION OF FORESTS
IN WEST GERMANY
(percent of county
forested)



Source: Adapted from map in: Federal Ministry of Food, Agriculture and Forestry. 1962. Forestry in the Federal Republic of Germany. Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst, Bonn-Bad Godesber .

TABLE 10
FOREST DISTRIBUTION IN GERMANY ACCORDING TO REGION AND STATES

Region/State	Forest ¹ Land (1000 ha)	Area Forested (%)	Forest Land per capita (ha)
Northern Region	1079.8	16.8	0.09
Schleswig-Holstein	130.0	8.3	0.05
Hamburg	3.7	4.9	0.0021
Niedersachsen	946.0	20.0	0.13
Bremen	0.1	0.2	0.0001
Middle Region	2360.0	30.4	0.09
Nordrhein-Westfalen	761.0	22.4	0.04
Hessen	809.0	38.3	0.15
Rheinland-Pfalz	710.0	35.8	0.19
Saarland	80.0	31.1	0.07
Southern Region	3542.0	33.3	0.18
Baden-Württemberg	1245.0	34.8	0.14
Bayern	2297.0	32.6	0.23
West Berlin	7.0	14.6	0.0033
Germany	6988.8	28.1	0.12

Sources: Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967. Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland. Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst, Bonn - Bad Godesberg; 1973. Statistisches Jahrbuch über Landwirtschaft und Forsten der Bundesrepublik Deutschland; Table II-B, Appendix.

¹ Does not include the area of roads over 5 meters wide, wasteland, water, quarries, etc.

while in southern Germany a large percentage of the area is forested (figure 9, table 10), about half of the forest land of Germany being concentrated in the two southern states of Bayern and Baden-Württemberg. Large continuous forest areas, where over 60 percent of the area is forested, are found in the mountains of Hessen, Pfälzerwald, Black Forest, Harz, Spessart, Odenwald and the Bayrischer Wald.

4.3.3. Forest Site Quality

In general, the overall site quality of German forests is quite high. If one accepts 1.4 cubic meters of annual growth capacity per hectare as a minimum for commercial timber production - a U.S. Forest Service standard - then, practically all of Germany's forests could be classified as commercial forest lands. An indication of the site quality of German forests is given in table 11, showing annual increments ranging from 3.1 to 6.3 cubic meters per hectare.

TABLE 11
SITE QUALITY IN GERMAN FORESTS

Species	rotation age (years)	volume (m ³ /ha)	increment (m ³ /ha)
Oak	140-180	120	3.4
Beech	120-140	140	4.0
Spruce	80-100	158	6.3
Pine	100-120	93	3.1

Source: Bundesministerium für Ernährung, Landwirtschaft und Forsten. 1967. Die Forst- und Holzwirtschaft der Bundesrepublik Deutschland. Land- und Hauswirtschaftlicher Auswertungs- und Informationsdienst, Bonn - Bad Godesberg.

Since the site classification system of the United States is based on production capability of natural stands occupying the site, the data in table 11 are not a true picture of the site quality in that much of the natural forest cover has been transformed into artificial stands, as was mentioned earlier. Therefore, the growth per hectare indicated is apt to depict a higher site quality than if the natural species of the site were considered. Nevertheless, there is no doubt that the overall site quality of the forests of Germany is very good and capable of maintaining a high carrying capacity.

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CHAPTER 5

THE AMERICAN FORESTRY IDEOLOGY

By the time the colonies had gained their independence, the field of forestry was already being based on scientific principles in Germany. Vast forest areas in the West remained unexploited and unexplored. The fledgling central government had problems enough with becoming an established political unit without trying to formulate forest conservation practices at a time when boundaries were uncertain in the East and the territory to the West was still being disputed.

During the next century acquisition and cessation of territory west of the thirteen original colonies to the Pacific Coast put the federal government in a situation in which it possessed extensive land areas that remained unsettled, but had little money in the central treasury. The first order of business was to dispose of this vast public domain through sale to private individuals and enterprises, a feature which dominated early American history as a major political and social force throughout the 19th century.

5.1. Institutional Framework

An awareness of the importance of the nation's forest resources began to surface toward the end of the 19th century while disposal of the vast public domain was still being intensively pursued. Forest land ownership patterns were not yet firmly established in the west,

but enabling national forest legislation and the formulation of a forestry educational system evolved in a relatively short time once it was determined that the forest resources were not "inexhaustible".

5.1.1. Forest Legislation

Rules and regulations concerning forest utilization were imposed on a local scale since the founding of the first colonies either by the colonies themselves or the colonial power.⁸ Still, the early settlers viewed the forest as an obstacle to development, with deforestation continuing mostly unheeded well into the 19th century. Prohibitive measures that were involved, were usually in response to strategic reasons such as for assuring naval timber supplies. Not until the end of the last century did positive forest legislation become a reality. Inclusion of all the forest legislation which ensued since the beginning of the forestry movement in the United States would be exhaustive. Consequently, only those mandates that are felt to be significant for this study are listed below.^{1, 8}

(1) Act of 1 March 1872: Reserved Yellowstone National Park "as a public park or pleasuring ground for the benefit and enjoyment of the people", initiating the National Park System.

(2) Creative Act of 1891: This and subsequent amendments empowered the President to set aside forest reserves.

(3) Act of 1897: Specified purposes for establishing forest reserves, provided for their protection and administration and by some interpretations, constitutes the original multiple use act under which multiple use

and sustained yield began.

(4) Weeks Act of 1911: Showed an awareness that sound forest management should be applied to the eastern forests as well as the public western lands, provided for cooperative forest fire protection system with some states, and provided for acquisition or purchase of deforested lands in watersheds of navigable streams to conserve the forests and the water supply.

(5) Act of 25 August 1916: Created the National Park Service in Department of Interior and defined purposes for establishing national parks.

(6) Clarke-McNary Act of 1924: Continued cooperative measures with states for forest fire protection, provided for distribution of reforestation planting stock to farmers, promoted management of farm forests and shelterbelts, and authorized studies of taxation on forest lands.

(7) Knutson-Vandenberg Act of 1930: Provided for establishment of forest tree nurseries and reforestation of harvested areas with funds derived from federal lands rather than appropriations.

(8) Act of 18 May 1933: Created the Tennessee Valley Authority.

(9) Sustained Yield Forest Management Act of 1944: Authorized formation of cooperative sustained yield units among federal, state and private lands with the main intent aimed at the regulation and management of harvesting practices.

(10) Cooperative Forest Management Act of 1950: Provided for federal cooperation with state foresters in providing technical service to private forest owners, operators and forest industry.

(11) Multiple Use - Sustained Yield Act of 1960: Stated that the National Forests were established and should be administered for outdoor recreation, range, timber, and wildlife and fish purposes to best meet

the needs of the American people without impairment of the productivity of the land.

(12) Wilderness Act of 1964: Provides for classifying portions of the National Forest System as wilderness areas without regard to commercial timber value and watershed protection.

(13) Wild and Scenic Rivers Act of 1968: Protects selected free-flowing streams from building projects and commercialization.

(14) National Trails System Act of 1968: Protects 3,291 kilometer Appalachian Trail in the East and 3,783 kilometer Pacific Crest Trail in the West with numerous other trails under study for inclusion.

(15) National Environmental Policy Act of 1969: Requires that presently unquantified environmental amenities and values are considered along with economic and technical factors and that appropriate alternatives are studied in environmental decision-making.

(16) Forestry Incentives Act of 1973: Provides for federal cost sharing for non-industrial private forest owners who wish to initiate forest management practices and provide for recreation; program is administered through state forestry agencies.

This brief account of pertinent forest legislation in the United States brings several features to light which are noteworthy:

(a) Recreation was a legislative factor almost 20 years before other forest uses;

(b) No mention is made of restrictions, obligations or prohibitions for the entire forest resource;

(c) Any cooperative forestry assistance from the national level is accomplished through the states;

(d) Prescribed forest management activities are confined to federally owned and administered forest lands;

(e) Since the initial legislation around the turn of the century which established the National Park System and created the National Park Service, almost half a century lapsed before intensive legislation in the last decade was again directed at reserving large forest tracts from timber production.

5.1.2. Forestry Education

By the late 1880's some instruction in forestry, usually included in botany or horticulture curricula, was offered at several universities, but no professional forestry instruction was available in the United States prior to 1898.⁷

5.1.2.1. Professional Education Development

Thirty years after the Hannover-Münden Forest Academy in Germany was founded, a graduate thereof, B.E. Fernow, headed the first professional forestry program at Cornell University in 1898.¹⁶ About the same time, the Biltmore Forestry School in North Carolina was founded by Carl A. Schenck, a graduate of Giessen University in Germany. Emphasizing practical training, the Biltmore School was not professionally recognized even though it turned out many early leaders in the profession. In 1900 the Yale School of Forestry was established on a graduate level directed by H.S. Graves who had studied forestry in France and Germany after having graduated from Yale.⁷

Within two years, these three educational institutions offered three different levels of forestry instruction, an unusual situation since their creation came at a time when there was no great demand for professional

foresters. But these beginnings saw a rapid increase in forestry education as the U.S. Forest Service expanded its operations. The number of American forestry schools continued to increase, since the turn of the century, developing a trend more and more towards specialization within the field of forestry and numbering 51 in 1973.² This trend in specialization is exemplified by Colorado State University which began offering a major in forest recreation in 1947, a program which has evolved into a Department of Recreation Resources in the College of Forestry and Natural Resources. Other major fields of study that American forestry schools have developed in meeting the specialized needs of the profession include wood technology, forest management, logging engineering, wildlife, range and watershed management.

5.1.2.2. Education of the Public

Until recent times, educating the public sector regarding forest benefits relied heavily on mass media means through such programs as "Smokey the Bear" fire prevention, making literature available at minimum cost, or providing free information for visitors to National Parks and Forests. However, more formal programs which provide greater contact with nature have been instituted for educators and students by various federal, state and local agencies in recent years. For example, the National Park Service has developed environmental education programs designed to help elementary and high school students to understand the relationship of humans and their environment. Cooperating with teachers, the National Park Service has developed teaching materials and study programs, and natural sites have been made available to give students of all ages personal

contact with their environment, the teachers assuming full responsibility for teaching the class and relating the experience to presite and postsite discussions. In 1969 alone over 30,000 students and teachers attended 169 workshops conducted by the Park Service.^{3, 28}

Similar programs have been developed by other federal agencies. Whereas the Park Service facilities are intended more for a day's outing, the Tennessee Valley Authority (TVA) also provides opportunities for the teachers and students to live and study in the outdoors at a 2000-hectare Environmental Education Center (EEC). In addition to the great number of classroom groups that have participated in one-day field trips to the EEC, over 22,000 students and teachers have taken part in the TVA residential program since 1966.¹⁸ State and local organizations are developing programs similar to or in conjunction with those of the National Park Service and the TVA.¹²

5.1.3. Forest Land Tenure System

The land ownership pattern of the United States is the result of historical developments and the fee simple system of property rights borrowed from the English.¹¹ About 80 percent of the present land area has been part of the public domain which was accrued through cessions, purchases and compromises. The land disposal program that ensued transferred a large portion of the public domain into non-federal lands before the policy was changed in the late 19th century. Most of the land which found its way into private ownership was po-

tentially the most productive for agriculture, timber growth or commercial utilization, since no one desired non-productive land.⁶ Consequently, nearly three-fourths of the nation's commercial forest land is in private ownership today (table 12). Non-commercial forest land remains mainly in public trust under administration of various federal agencies.

National forests encompass 18 percent of the total commercial forest area with other federal, state and local public holdings comprising another nine percent. Forest industries own 14 percent of the commercial forest area, including some of the most productive in the nation. Approximately one-fourth of the commercial forests are a part of farm holdings and another third is in other small private ownership, the owners being a variety of business and professional people, housewives, landholding companies and so forth. Together these non-industrial forest owners control 59 percent of the total commercial forest land, distributed among over four million owners having an average individual holding of 40 hectares.^{5, 29} A third of these four million forest owners have holdings less than eight hectares in area; over half have holdings comprising from 8 to 40 hectares in area. But these two groups of small owners own only 40 percent of the total non-industrial private forest land while larger ownerships, although only one percent of the total number, take in 25 percent of the area.²⁹

5.2. American Forestry

Taking the definition of forestry literally, practically all phases of forestry are evident in the United States. Scien-

TABLE 12

COMMERCIAL FOREST LAND IN THE UNITED STATES BY REGION AND OWNERSHIP - 1970
(48 conterminous states)

Ownership class	United States total		North		South		West	
	1000 ha	%	1000 ha	%	1000 ha	%	1000 ha	%
Federal total	41216	21	4982	7	5779	7	30456	61
National Forest	35120	18	4232	6	4356	5	26531	53
Other federal	6069	3	750	1	1422	2	3925	8
Other public - total	11401	6	7932	11	1215	2	2254	5
State	7330	4	5292	7	939	> 1	2099	> 4
County, Municipal	3071	2	2640	4	276	< 1	155	< 1
Private - total	146890	73	59082	82	70929	91	16880	34
Industry	27253	14	7108	10	14296	18	5849	12
Farm	52924	26	20647	28	26361	34	5916	12
Other	66714	33	31327	44	30272	39	5114	10
Total	199507	100	71996	100	77922	100	49590	100

Source: USDA Forest Service. 1973. The Outlook For Timber In The United States. FRR-20.
U.S. Forest Service, Washington, D.C.

tific, social and economic principles are effected on all forest lands, but the degree of intensity that these principles are applied is highly variable.

5.2.1. Forest Policy

No one single policy for all the nation's forest resources exists; however, as the major forest management agency, the U.S. Forest Service is responsible for carrying out national legislation relative to the National Forest System, and state and private forests; it is taken as the focal point for a national forest policy.

The Forest Service adheres to the principles of multiple-use management of the forest resources for sustained yields of wood, water, forage, wildlife and recreation to provide for present and future demands for goods and services from the nation's forest resource base. To adhere to this principle and fulfill its responsibilities, the Forest Service has established broad objectives and policy guidelines as a "Framework for the Future" which are to:²³

- (a) Protect and improve the quality of air, water, soil and natural beauty.

- (b) Promote and achieve a pattern of natural resource uses that will best meet the needs of the people now and in the future.

- (c) Help protect and improve the quality of the open space environment in urban and community areas.

- (d) Generate forestry opportunities to accelerate rural community growth.

(e) Encourage the growth and development of forestry-based enterprises that readily respond to consumer's changing needs.

(f) Seek optimum forest landownership patterns.

(g) Improve the welfare of underprivileged members of society.

(h) Encourage the development of forestry throughout the world.

(i) Involve the public in forestry policy and program formulation.

(j) Expand public understandings of environmental conservation.

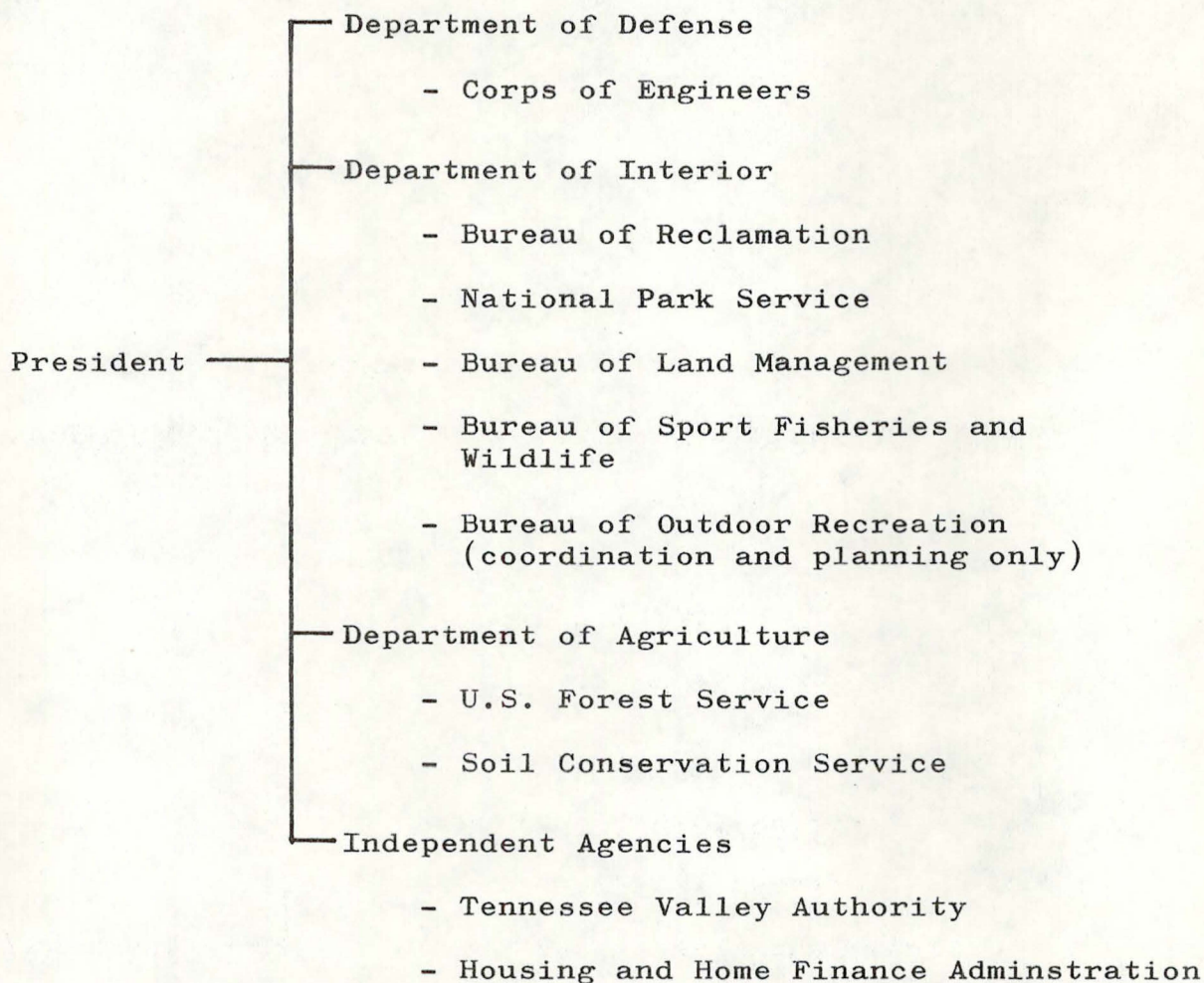
(k) Develop and make available a firm scientific base for the advancement of forestry.

While the National Forests are managed on a multiple-use basis, as are those forest lands falling under the jurisdiction of the Bureau of Land Management, the National Parks were exclusively established to preserve outstanding recreational, inspirational and historic values for public enjoyment, with logging, grazing, hunting and mining prohibited.²⁶

5.2.2. Forest Administration.

Major federal land management responsibilities are divided among numerous agencies within the Cabinet of the Presidency (figure 10). Although all of these agencies are directly involved in administering the federal land resources of the nation, most forestry activities are confined to the large forest land

FIGURE 10
FEDERAL LAND MANAGEMENT AGENCIES IN THE UNITED STATES



Source: Outdoor Recreation Resources Review Commission.
1962. Outdoor Recreation for America. U.S.
Government Printing Office, Washington, D.C.

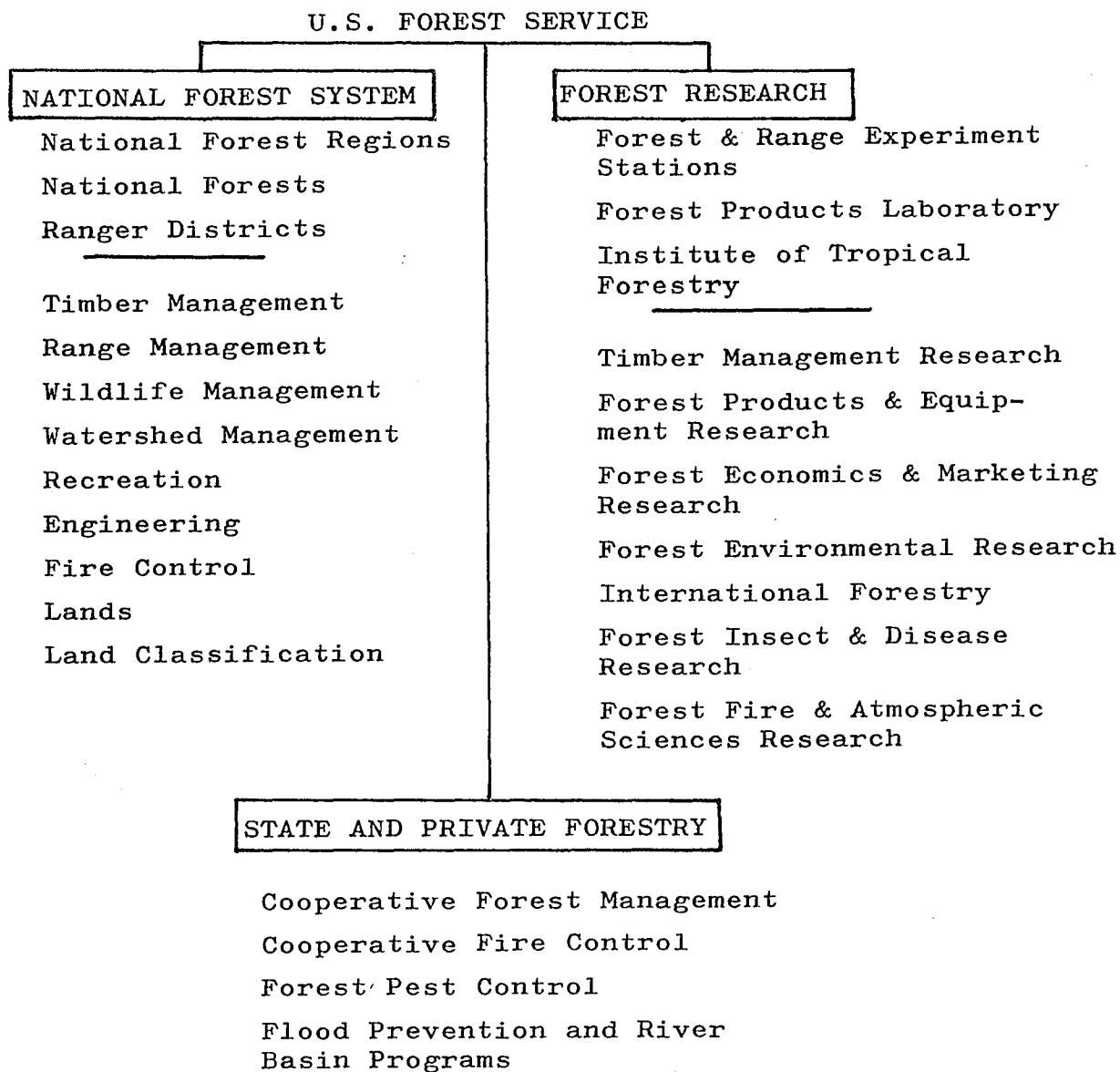
management systems of the National Park Service, Bureau of Land Management and the U.S. Forest Service. The Bureau of Outdoor Recreation was established as a national planning and coordinating agency for outdoor recreation programs in 1962 and, as such, does not have any direct land management responsibilities. As the chief national agency for managing the nation's forest resources, responsibilities of the Forest Service lie in three distinct areas: Administration of the National Forest System and certain other federal lands; cooperation with state and private forestry agencies; and carrying out forest research²² (figure 11).

Congress gave the President authority to create forest reserves in 1891, but provision for administering these reserves were first authorized by the Act of June 4, 1897 which provided for a system of organization and management. Initially under the jurisdiction of the General Land Office in the Department of Interior, the forest reserves were transferred to the Department of Agriculture in 1905, giving rise to the Forest Service. The term 'forest reserves' was changed to 'national forests' in 1907 and by 1908, administration of the national forests was decentralized by establishing regional forest headquarters with supervisors having authority to make on-the-ground decisions. Today, national forests number 154 with a combined area of over 73 million hectares.¹⁵ The Ranger District - the smallest administrative unit and foundation of the National Forest System - ranges in size from 20,000 to 360,000 hectares, the average size being 80,000 hectares.⁴

The Bureau of Land Management and National Park Service administer the forest lands under their jurisdiction

FIGURE 11

ORGANIZATIONAL CHART OF THE U.S. FOREST SERVICE



Source: Adapted from Alston, Richard M. 1972. Forest Goals and Decisionmaking in the Forest Service. USDA Forest Research Paper INT-128. Intermountain For. & Range Exp. Sta., Ogden, Utah.

according to their individual policy guidelines, the National Park Service being responsible for about 6 million hectares of land in 34 National Parks and the Bureau of Land Management entrusted with some 8 million hectares commercial and 38 million hectares non-commercial forest land in the 48 contiguous states.^{19, 27}

Many states have forestry administrative organizations and organized farm-forestry extension projects in co-operation with federal agencies, with foresters promoting state programs designed to educate and demonstrate to the farm-forest owners the advantages of good forest management. Assistance to owners of private forest lands is authorized by the Cooperative Forest Management Act of 1950, making technical assistance available through federal cooperation with the states. Foresters, administering the technical aid, are employed and supervised by cooperating state agencies, the federal government sharing the costs. In addition to these cooperative responsibilities, the recent Forestry Incentive Act of 1973 provides for further federal cost sharing in carrying out sound forest management on private, non-industrial forest lands.

5.2.3. Forest Management

On federal forest lands, management is dictated by institutional process; private forest owners have no specified obligation to manage their forest resource as long as no externalities exist.

5.2.3.1. Forest Regulation¹⁰

As long as virgin forests provided adequate timber supplies

little organized effort to grow timber was deemed necessary, but as virgin forests diminished by the turn of the century, organization and maintenance of a forestry program became apparent. In the first three decades, progress was slow, with advances first made in the National Forests and then strong inroads developing in the forest industry sector after World War II. Since the turn of the century periodic forest inventories have been carried out by the Forest Service on a nation-wide basis. Authorized by the McSweeney-McNary Act of 1928, appraisals of the extent and condition of the timber resource of the United States have been accomplished approximately every decade with the most recent occurring in 1970.

Many of the European techniques inherited for cut regulation could not be applied toward permanent forest management under American conditions, where critical problems centered around protection against wildfires, establishing a permanent system of management, and setting priorities in regeneration and stand improvement. Regulatory controls vary naturally because of wide diversity of forest conditions and purposes of management. A dominant problem in the East is the organization of the cut in second-growth stands that are mostly deficient in stocking, quality and size/age distribution. In these forests practices are commonly in the form of stand improvement by area allotment or silvicultural marking based on timber market conditions. In the West the problem involves scheduling the cutting in old-growth high volume forests to bridge the gap to meet deficiency in intermediate age classes caused by an excess of old and young growth forests.

Approaches to timber harvesting tend to differ according to ownership, with federal forest agencies - Forest Service and Bureau of Land Management - applying longer rotations for larger timber in line with a public conservation policy and multiple-use objectives. On industrial ownerships, controls are systematically applied with emphasis on maximum timber production, practicing multiple-use according to opportunity and needs. Trends are toward shorter rotations, large-scale area treatment and application of even-aged management through clear-cutting and planting.

On the public lands administered by the Forest Service and the Bureau of Land Management, preparation of management plans have been vigorously pursued since the organization of the Forest Service in 1905. For the 400 working circles in the National Forests, various plans have been developed, depending on data available and relative importance of those forest uses besides timber production for which the public forestry agencies must take into consideration.

Formal plans for industrial forests have become more prolific since the stabilization of industrial forest holdings and operations around 1950. The plans are not normally publicly available, but they would tend to be flexible in regard to long-term commitments and backed by operating policy and practices. Numerically, more management plans have been prepared for small woodlands than for any other group. Formulated by extension and consulting foresters, these plans are more as proposals for the owner, who may or may not follow them except where aid is contingent on adherence to certain practices specified in federal, state or industry cooperative programs.

While industrial and public management organizations are built around efficient administrative units designed for continued production, most non-industrial private lands are individually too small for efficient management. To achieve a large management unit, small private holdings are sometimes organized into groups as "Tree Farm Families", cooperatives or under land-management leases for supplying wood to an industry on a sustained basis. Still, less than ten percent of the small private forest owners practice any form of management.⁵

5.2.3.2. Silviculture¹⁷

At the turn of the century, the logging industry had already reached the Pacific Douglas-fir timber region, was operating in the pine lands of the South, was completing the cutover of the Lake States and had begun work on the second-growth white pine stands in New England. Vast timber resources created little concern for silviculture. Yet, attempts were begun in the early years of the century by: Fernow who proposed a variety of silvicultural methods in 1901, but was confronted by a hostile public which protested his clearcutting harvest and artificial planting techniques; Schenck who had established some plantations in North Carolina; and Gifford Pinchot who as Chief of the Division of Forestry, supervised logging operations in New York in 1900. Around the same time the first government timber sale was carried out in ponderosa pine which was essentially clearcut with seed trees left behind for regeneration. Although protests were voiced against clearcutting, this system was favoured over the selection system. In practice, clearcutting to a diameter limit with seed trees

reservation was, in most instances, the extent of silvicultural control.

American silviculture evolved through several stages. With extensive forests, the logger of the 19th century was mostly looked upon as a pioneer, clearing the land for agriculture and settlement. But as local shortages of forest products occurred, a need was seen for some restriction of forest cutting and control of unrestrained logging. Once the importance of the forest land was realized, a "no-investment" silvicultural policy ensued whereby practices were implemented to prolong the existing forest stands. In western ponderosa pine forests this was successfully accomplished by "risk-marking" - removing those trees least likely to survive until the next cutting period. This selection system proved to be a unsuitable one in west coast Douglas-fir forests where clearcut was more practical. Efforts in eastern hardwood forests were mainly directed at improvement cuttings to perpetuate high-value, fast-growing trees.

"Minimal investment" practices followed which strived for reproduction by: Restricting the size of clearcutting in order to achieve seeding from the edges; reserving seed trees; or seeding directly. Finally silvicultural management required positive efforts and relatively large investments to assure a degree of success, involving the application of variants of the shelterwood harvesting system; chemical, fire and mechanical treatments of vegetation; seedbed preparation; and planting. This would be considered silviculture in the classical sense. Some larger industrial forests have reached this stage, but in general, the forests of the United States are being silviculturally managed at a stage below intensive practices.

Concurrent with measures taken to create favorable conditions for achieving natural regeneration, new cutting methods had to be designed around specific forest types to minimize damage from insects, disease, wind and frost. This need was exemplified by the failure of the selective harvesting system in old-growth Douglas-fir, whereby the residual stand was susceptible to damage caused by wind, ice and disease. Selective cutting in these stands was supplanted by patch or block clear cutting to achieve natural regeneration, but windthrow persisted as a problem so that the trend has been toward clearcutting and artificial regeneration.

In contrast to the Douglas-fir type, the open ponderosa pine types are characteristically well adapted to selective cutting systems, with these methods normally being applied to this type.

In the Northeast, partial cuttings in older balsam fir forests reduce the likelihood of spruce budworm infestations, and by maintaining a closed forest canopy and undisturbed site, control of gypsy moths in oak forests is thought to be enhanced. In the Lake States, both insects and disease damage can be reduced by maintaining high stocking and shade.

5.2.3.3. Forest Protection

Uncontrolled wildfires continue to be a major threat to forest resources in the United States. For example, in 1970 an early summer drought in many parts of the West created conditions in the National Forest System where 15,000 fires burned 224,000 hectares - the highest figure

in 36 years.²² As a percent of total forest area burned, figures fall around one-half of one percent annually.¹⁹

Insect and disease damage is problematic in the forests of the United States because of inaccessibility of some areas and the presence of old growth stands, valued primarily for scenery and recreation. Chemicals have been effectively used to combat insects and disease, with natural and synthetic attractants for insect control receiving increased attention. New remote sensing techniques for detection and computer evaluation of data have aided in the prompt control of forest pest outbreaks which cause annual losses on all ownerships amounting to around 40 percent of the timber harvest.²²

5.3. Forest Resource Base

Originally, natural forests extended over the entire eastern portion of the United States in practically an uninterrupted cover from the Atlantic Seaboard to the Great Plains. West of the Prairie, more isolated groups of forests occurred, mainly in the mountainous areas where precipitation is more profuse. These forest lands of the west have generally been spared the impact of the plow, remaining available for other uses, mostly because of topography, poor soil or adverse climate. Large areas of Eastern forest lands, once cleared for agriculture, have reverted to forest use, but encroachments by urbanization and industrialization continue to exact their toll, especially on commercial forest lands.²¹ Estimates of the original area of forest cover are highly subjective ranging from 360 to over 400 million hectares, or 50 to 60 percent of the total land area of the 48

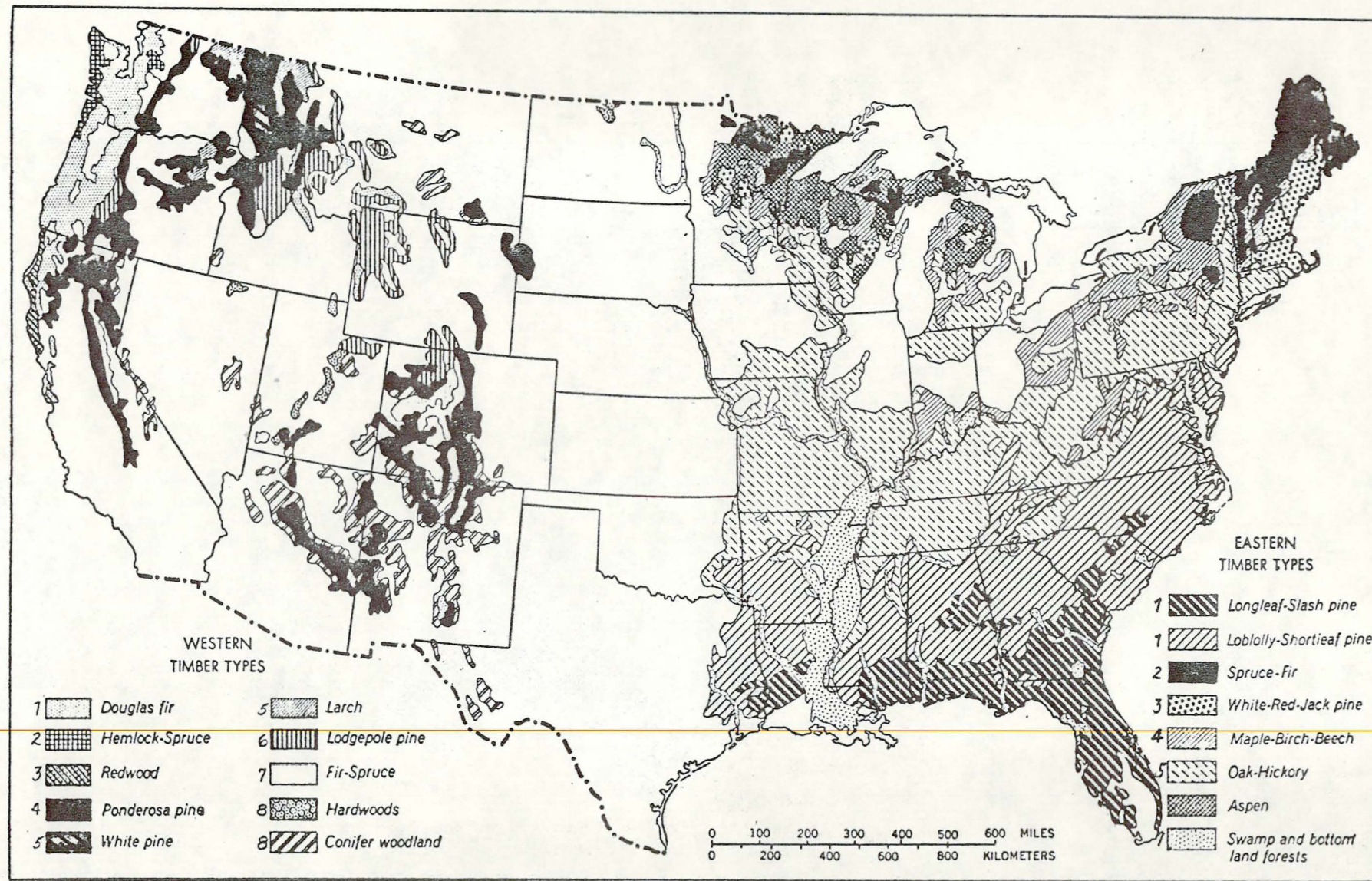
conterminous states.^{9, 13} After more than three centuries of settlement and development, forests still occupy one third of this land area.

5.3.1. Natural Forest Regions^{13, 14, 20, 24, 25}

For purposes here, 18 major forest types, composed of 845 native tree-species, have been delineated according to eastern and western forests (figure 12). Other timber types that have been deciphered - oak-pine, oak-gum-cypress and elm-oak-cottonwood - are included in these types, the former under the southern pine types (1) and the latter two combined under swamp and bottomlands (7) of the eastern forests.

Forest types of the East have experienced extensive human activity, but are still rather representative of the original forest cover. Most evidence of forest cover alteration is reflected in the changing pattern and composition in the southern pine type (1) where the oak portion of the type is giving way to pine plantations. The northern pine (3) and hardwood (4) regions have also been impacted by overcutting, logging and fire, with many sites in these two types succumbing to northern hardwoods and aspen respectively. Oak-hickory forests, containing many other hardwood species, have seen extensive clearing for agriculture. Included in swamp and bottomland types are mangrove thickets and other subtropical vegetation.

Western forests have remained relatively intact with little alteration in timber type. Douglas-fir (1) and ponderosa pine (4) types are by far the most extensive western forests, often occurring in pure stands. Hemlock-



Sources: Little, E.L. 1971. Atlas of United States Trees, Vol. I. USDA Misc. Publ. No. 1146 USDA, Washington, D.C.; Josephson, H.R. and D. Hair. 1956. The United States. In: Haden-Guest S. et al, eds. World Geography of Forest Resources. Ronald Press, New York, p.151.

FIGURE 12 - MAJOR FOREST TYPES OF THE UNITED STATES

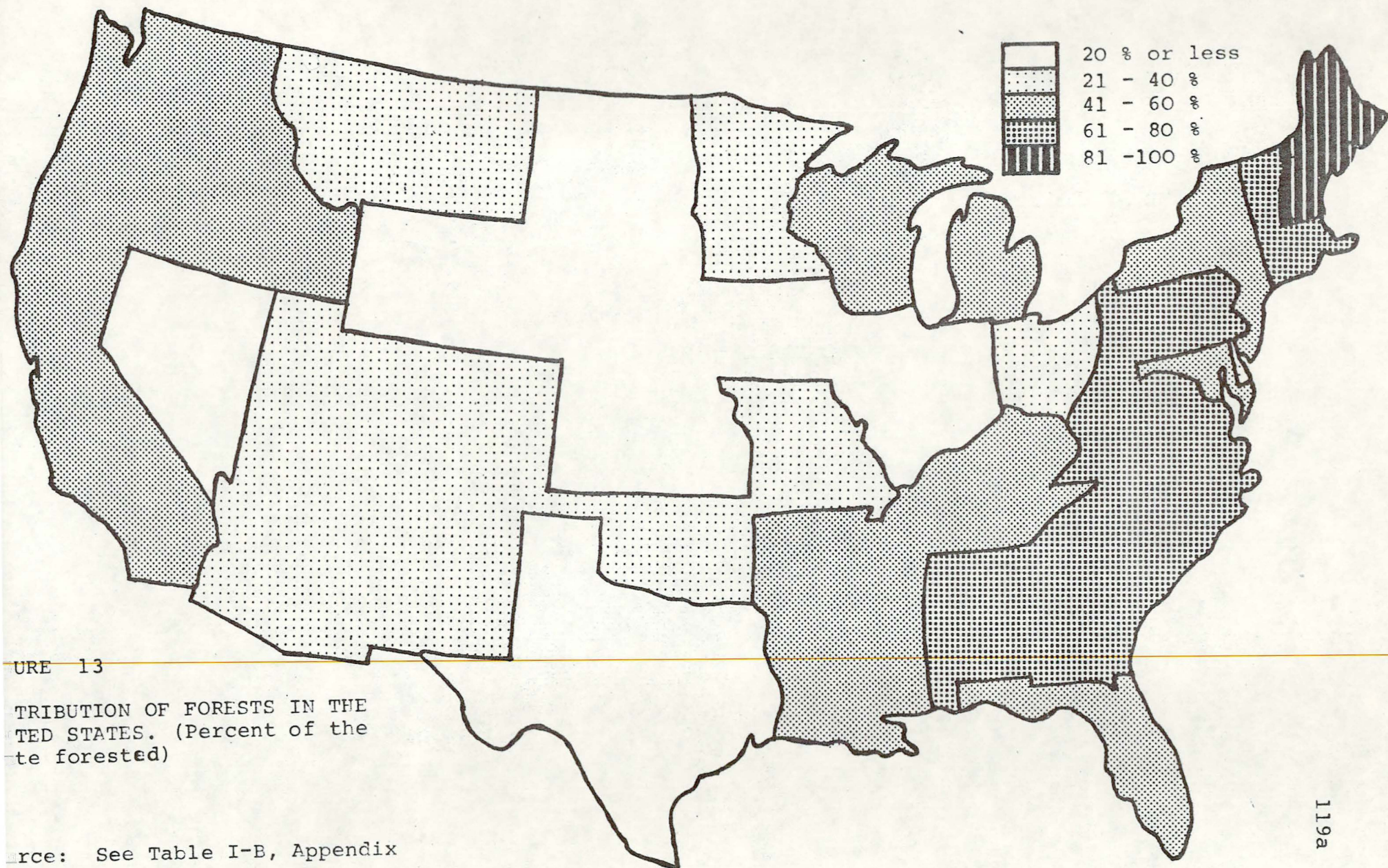
spruce (2) and redwood types (3) are found mainly in small areas of the fog belt along the Pacific coast, while lodgepole pine (6) is common to all middle elevations of the Rocky Mountains.

Vast tracts of the Western United States consist of commercially less important forest cover types (8), although these types are extremely important for grazing, watershed protection and recreation. Most extensive of these types are those composed of Pinon pine and juniper, occurring on sites at lower altitudes throughout the western interior and often merging with ponderosa pine at higher elevations. Stunted hardwood trees and shrubs, commonly referred to as chaparral, cover extensive areas in southern California, being less widespread in other regions.

In area, the eastern hardwood forest types comprise over half of the total commercial forested area of the United States. Western and eastern softwood timber types combined make up about 42 percent of the total area.

5.3.2. Forest Resource Distribution

No statistical data or maps on a smaller scale than for individual states were available for the forest resource distribution in the United States. As a result, much leaves to be desired in the depiction of the resource distribution in figure 13, but it does give an indication of forest density on a broad scale. Obviously there are 100 percent forested areas both in the East and West, especially in those areas under the National Forest System.



URE 13

TRIBUTION OF FORESTS IN THE
 TED STATES. (Percent of the
 te forested)

rice: See Table I-B, Appendix

TABLE 13

DISTRIBUTION OF FOREST RESOURCE IN THE UNITED STATES
 ACCORDING TO SECTIONS AND REGIONS
 (48 conterminous states)

Section/Region	Total forest land (1000 ha)	Commercial forest land (%)	Total area forested (%)	Forest land per capita (ha)
New England	13522	97	83	1.12
Mid Atlantic	21528	93	61	0.48
Lake States	21531	94	44	1.24
Central	17620	98	23	0.46
North Plains	871	90	2	0.67
South Plains	967	93	2	0.26
North - total	76039	95	30	0.65
South Atlantic	20031	98	65	1.60
East Gulf	17595	95	61	1.50
Central Gulf	20971	99	58	2.16
West Gulf	27151	76	25	1.38
South - total	85750	91	41	1.60
Pacific Northwest	21652	82	51	3.86
Pacific Southwest	17163	40	42	0.85
North Rocky Mt.	22037	66	26	12.38
South Rocky Mt.	33339	30	24	4.93
West - total	94191	52	31	2.74
United States (48)	255978	78	33	1.23

Sources: U.S. Bureau of the Census. 1972. Statistical Abstract of the United States. Washington, D.C.;
 USDA Forest Service. 1973. The Outlook for Timber in the United States. Washington, D.C.

Still, some features are evident on the state system of distribution.

Total forest land is rather well distributed among the three major sections of the United States - North, South and West, but on a regional or state basis there is wide disparity in distribution, varying from the treeless Great Plains to the densely forested New England Region (table 13). Most regions are also endowed with a high percentage of commercial forests, the Pacific Southwest and South Rocky Mountains being the exceptions with more than 50 percent non-commercial forests.

5.3.3. Forest Site Quality

Forest lands in the United States are extremely variable in their natural production capability. In addition to natural factors, however, large areas of forest land have been removed from timber production activities for other land use purposes (table 14). Unproductive forest lands - those incapable of supporting at least 1.4 cubic meters of timber growth per hectare yearly - comprise 19 percent of the total forest area of the United States. Another three percent is productive, but legally reserved from timber production or deferred while under study for other uses, mainly for inclusion in the wilderness program. Together, classed as non-commercial, these lands make up almost a quarter of all the forest land.

An indication of the wide disparity of site quality is manifested by viewing the site productivity of the commercial forest land, comprising 78 percent of the total forest area of the 48 united states. Although almost half of the

TABLE 14
FOREST LAND CLASSIFICATION IN THE UNITED STATES - 1970
(48 contiguous states)

Classification of Forest Land	Total United States		Section					
			North		South		West	
	mil.ha	%	mil.ha	%	mil.ha	%	mil.ha	%
Commercial timberland	199.5	77.9	72.0	95.4	77.9	90.9	49.6	52.3
Non-commercial forest	56.5	22.1	3.5	4.6	7.8	9.1	45.2	47.7
productive-reserved	6.9	2.7	1.8	2.4	0.7	0.8	4.4	4.6
deferred	1.1	0.4	0	0.0	0	0.0	1.1	1.2
unproductive	48.5	19.0	1.7	2.2	7.1	8.3	39.7	41.9
Total Forest Land	256.0	100.0	75.5	100.0	85.7	100.0	94.8	100.0

Source: U.S. Forest Service. 1973. The Outlook for Timber in the United States.
Forest Resource Report No. 20, Washington, D.C.

TABLE 15
 SITE QUALITY DISTRIBUTION OF COMMERCIAL FOREST LAND IN
 THE UNITED STATES

1970

(Percent)

Productivity Class		Region/Section					
cu. meters	cu. ft.	U.S. Total	North	South	Rocky Mts.	Pacific Coast	
high > 8.4	120	10	20	25	10	45	100
medium 6-8.4	85-120	23	33	46	7	14	100
3.5-6	50-85	40	35	46	7	12	100
low 1.4-3.5	20-50	27	45	27	23	5	100
		100					

Source: USDA Forest Service. 1973. The Outlook for
 Timber in the United States. For. Resource.
 Rep.No. 20. USGPO. Washington, D.C.

forests are considered non-commercial, the forest lands of the West Section also include the highest concentration of forest lands capable of producing in excess of 8.4 cubic meters of wood growth per hectare annually (table 15).

The Pacific Coast states - Washington, Oregon and California - have a relatively small amount of low quality forest sites. The forests of the Rocky Mountains area are somewhat less productive than other sections, with more than half of the commercial forest land consisting of low quality sites. In contrast thereto, the South and North Sections have large areas of productive lands, although high quality sites are less extensive than are found on the Pacific Coast.

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CHAPTER 6

THE FORESTRY IDEOLOGIES IN PERSPECTIVE

The physical settings, the structure, natural characteristics and socioeconomic factors of the German and American populations have very much in common as was noted in Part I. Having presented the basic data of the individual forestry ideologies in the previous two chapters, it is now possible to comparatively discuss the various major elements of the ideologies.

6.1. Process

In essence, the process area encompasses that part of the ideology from fundamental beliefs, ideas and thinking of the society, expressed through its basic institutions, to and including the institutional phases and profession of forestry.

6.1.1. The Legal Framework

Historical developments of the two countries have resulted in the obvious difference in the level of governmental responsibility. Although both countries have a similar form of democratic government, each state of Germany was one or more small independent territories to the close of the 19th century, while the United States was founded on the principle of a strong central government. Still based on a divided power concept in the federal structure, the State in Germany remains the central focal point as far as forestry matters are concerned.

Noteworthy of the federal mandates of Germany is that all those items prescribing prohibition or obligations are remnants of the Third Reich Era, but have been found appropriate to be retained in the interest of protecting and maintaining the forest. Prior to the Reich Era, similar laws on a more local scale were instituted throughout the territories of Germany and Europe, stemming mainly from the flooding and general landscape deterioration which occurred from uncontrolled forest management and harvesting.^{19, 20, 25, 30} Until this century the legislation of Germany had been directed toward the prevention of further reduction in the forest area and increasing wood production. What the list of German mandates does not show is the influence of the Third Reich Nature Protection Law (Reichsnaturschutzgesetz) of 1935 and the subsequent decree thereto in 1936. This law was the first official, comprehensive and standard regulation of thoughts and ideas for the protection of nature which had their roots already in the second half of the 19th century. Technically it is not a federal law, the responsibility of the protection of nature having been legally delegated to the states after the war, where the law has been changed or applied in various degrees.²⁴ But it has provided a legal basis for protecting certain natural objects, landscape areas, plants and animals under an array of categories.

Declaring Yellowstone National Park a "public park" in 1872, nearly twenty years before the establishment of the first national forest reserves, is an indication of the role of forest recreation in the United States already at a time when the area was more remote to the people than today. But a feature not manifested by the list of American legislation is that large remote areas

in the National Forest System had been proclaimed as primitive wild, canoe or wilderness areas by administrative decrees of the Secretary of Agriculture since 1924.¹¹ These additional areas have since been or are under study to be included in the National Wilderness Preservation System, established by the Wilderness Act of 1964, protecting them by law.¹⁰

While substantial legislation has been enacted regarding the management of the forest resources of the United States, prohibitive or obligatory practices for the private sector are lacking, with mandates providing only for federal cooperation, incentives and technical assistance upon the request of the private forest owner. Any reference to forest management of a particular nature is restricted to federal lands, the private owner being required to follow certain practices only if he participates in federal/state assistance programs.

In Germany the private forest owner has more specified directives as to how his forest land should be managed and utilized, whereas in the United States private property is yet a facet of society considered almost as a "holy" and "hands off" right of the owner. The basis for the legal impositions on the private forest owner in Germany lie in Article 14 of Germany's Basic Law which guarantees the right to own property, but at the same time states that the property shall be used to serve the well-being of the society.¹⁸ But at the same time, the German forest owner has more favorable economic and legal circumstances as inducement to manage his forest. He is not only provided incentives and close technical assistance by the government, but he can also obtain long term loans, has a favorable tax structure and can insure his

timber against loss or damage relatively easy. In addition, the newer forest laws of some states allow retributions for losses incurred by the owner in providing public benefits. So, although the German forest owner is forbidden to clear or exploit his forest without authorization, must reforest after harvest and, in some instances must allow public access to his land, he is duly compensated by the government for providing these services.

It is exactly these features of the German forestry ideology that are lacking in the American System to help promote improved forestry practices on non-industrial private forests. The American forest owner must still bear his risks of losses from natural causes, trespass and carelessness; no insurance company offers forest fire insurance on a regular basis; the tax structure, although improving in many states, likewise leaves much to be desired; and no forest laws provide compensation for damage resulting from public use of his property. Technical assistance is available, but must generally be obtained by the owner's initiative rather than the assisting agency going to the forest holder. Lack of long-term, low interest loans as investment capital are also limited for the American small private forest owner.²⁸ Hoped to motivate the small private forest owners to manage their forest, the Forestry Incentives Act of 1973 provides for cost sharing of up to 75 percent for approved management practices which improve recreation opportunities, wildlife habitat, timber production, and erosion protection.^{16, 41}

Although not applicable to non-federal forests, the National Environmental Policy Act of 1969 necessitates the coordination of forest management activities of federal agencies with the provisions set forth in the Act, which

require that an environmental impact statement be prepared to determine the effects that the proposed management activity will have on the quality of the environment. With this Act, the public sector has obtained a legal basis of participation in the decision-making process in the American forestry ideology to prevent economic and technological considerations to prevail at the expense of environmental quality. As a result, professional decisions must stand the test of public acceptance, a feature unique to the American forestry ideology.²⁹

6.1.2. Economic Influences

A primary concern of the timber owner in Germany is the economic return from his property, whether it be in public or private ownership. Actually, the development of primitive forest practices into the science of forestry in Germany was motivated by economic profit that the feudal kings and princes could reap from their forests.³⁰ It is also one of the reasons for the transformation of many of the hardwood forests of Germany into conifer stands.²² This feeling, that most other benefits of the forest were secondary to that of showing to the owner an economic profit, was prevalent at least to the turn of the century.⁶ This long tradition of economic gain from the forest is without question an important incentive to manage a forest for timber production.

Industrial forest lands in the United States are undoubtedly managed on a profit basis; however, the small private owner has had little incentive to make large, long-term investments against which he cannot be assured of an economic return.²⁸ Thus, he leaves his forest in

an unmanaged state. On the public lands, management for timber is forbidden in the National Parks and Wilderness Areas; in the National Forests, maximum economic gain has not been and may never be a requirement since the Forest Service is funded through appropriations from Congress and the public forests continue to become more important for their non-timber values.¹³ Moreover, wood prices in the United States were one-fourth those of Germany around the early 60's.²⁶ With climbing stumpage and wood product prices in the United States, greater impetus should be forthcoming for more intensive management in public as well as private forests.^{31, 34}

Governmental legislative processes may depict to some extent the concern a society has for its forest resource, but economic factors often have far greater impact, not only on the management, but the very existence of the forest. This is particularly true around urbanized areas where economic value of the land base is much greater for building and infrastructure developments than for growing trees. Consequently, loss of the land resource itself to urbanization and industrialization in areas where it is needed most is problematic in both countries.^{21, 34}

6.1.3. Educational Aspects

Professional forestry educational systems of the United States and Germany have much in common, but also some major differences. About the same amount of time is required to accomplish professional forestry training in both countries, the programs including much the same fundamental subjects. But while the number of professional forestry schools in the United States grew from a few to over 50 in this century, the number of schools in Germany

decreased from seven in the German Reich of 1900 to four today, one being in East Germany.⁹ At the same time forestry schools in the United States developed their programs along the lines of specialization and interdisciplinary curricula often beyond the traditional natural sciences to include social and humanities subjects, while the schools in Germany have tended to maintain the classical natural science forestry concept, with all forestry students at a university being examined in the same areas of study.

In the United States many forestry schools offer a "major" in recreation management,^{11, 37} while information regarding this area of study is presented more indirectly in conjunction with landscape maintenance and land planning lectures and seminars in Germany.⁴⁵ However, recreation as well as increased specialization in the forestry schools of Germany is being emphasized more now and for the future.⁹

Education of the public sector regarding forests and forestry is well integrated into the public school system in Germany, while this approach seems to have first gained ground in the United States in recent decades as environmental concerns increased. More and more emphasis has been placed on informing the public about forestry activities in both countries. In recent years the Baden-Württemberg Forestry Administration has given press conferences, sponsored forest games for youth and nature hikes for all ages, and held lectures and dedication ceremonies for opening recreation areas, totalling more than 1300 occasions and involving 164,000 youths and adults.^{4, 43} Similar public relations activities are common in the United States as well as being one of the objectives and policy guides of the Forest Service.³⁶

6.1.4. Effects of Forest Ownership Patterns

Forest ownership patterns in the United States and Germany show quite a disparity between the two countries (table 16). In the United States public ownership is concentrated in the federal government, whereas in Germany public forest land is predominantly in municipal, corporate and state ownership.

TABLE 16

TIMBER LAND OWNERSHIP IN THE UNITED STATES AND GERMANY

Land owner	United States (%)	Germany (%)
Federal	21	2
State	4	29
Corporate/Municipal	2	25
Private	73	44
	100	100

Source: See tables 9, 12

Almost three-fourths of the total forest land is in private ownership in the United States, whereas Germany has less than half of its forest in private holdings. Still, the small private forest ownerships present difficulties of management in both nations because of their small scale diseconomies, making labor and equipment required for forest enterprises too expensive for the small operator.^{12, 28} Formation of forest coopera-

tives among small owners is a feature of both societies but is more prevalent in Germany since conditions are more conducive there to motivate the owner to manage his forest. In the United States forest industries are also a pertinent force in managing small private forests by leasing the surface rights of such lands for timber management and promoting forest practices through means such as the "Tree Farm" program, but in general, the number of small owners participating on such programs is small. With only 44 percent of the total timber land in private hands and though there is a large number of small private forest owners with an average holding of only four hectares as compared to forty in the United States, the forest ownership pattern is generally more favorable for management in Germany than in the United States. Having a large percentage of the forests in local public hands in Germany allows greater flexibility in providing for the needs of the people where it is needed most - around urban centers. Although some cities have maintained large green areas in the United States, only in recent years have some municipalities emphasized the purchasing of forest lands for parks.

The ownership pattern also appears to have had some influence on present resource location. In addition to severe restrictions of public forest usage imposed by cloisters and nobility, many villages and communities, realizing the importance of forests for providing fuel-wood and construction material, also had harvesting prohibitions and played a role in developing early forest practices.^{8, 25} Consequently, today it is not uncommon to find extensive forests within short distances of even major cities as Munich, Frankfurt, Mannheim, Hamburg and Stuttgart.

6.1.5. Forestry as Process

A fundamental difference of forest policy formulation and administration organization of the two countries is that in Germany the legal authority for seeing that the forest policy is instituted in all the forests within a state, regardless of ownership, falls under one central agency. For example, if federal, state, municipal and private forest lands are located in one state (which is usually the case), one state forestry agency has responsibility for prescribing management activities on all the forest land, subject only to the legal rights of the owner.

In the United States, on the other hand, policy formulation is geared to administrative patterns, the Forest Service, National Park Service and Bureau of Land Management all designing their policies according to legislative prerequisites. Individual states are responsible for implementing federal cooperative programs only on non-federal and private lands under their auspices. For instance, a state may find within its boundaries forest land under the administrative responsibility of several federal agencies, in addition to its own, other local, public and private forest lands. Although there are cooperation agreements among the various federal agencies involved in forest land management, and the Forest Service is the major public forest land manager and cooperator for management on other forest ownership lands, responsibility for instituting forest policy for all forest lands within a state may be spread over numerous agencies.

From the onset of forestry in the United States, certain forest areas were designated as special purpose forests. National Parks, for example, were set aside as recreation areas; National Forests took on a multiple-use function. In Germany, forestry has always provided social benefits,

but as a rule it has had economic goals with other benefits arising as secondary consequences to that of timber production until the turn of the century.^{5, 6} Since chronic national timber shortages did not occur in the United States, some forest areas could be maintained as single-purpose areas, while Germany's forests have had to fill multiple functions for centuries. This is manifested in excerpts of Baden-Württemberg administrative forest policy which has as its overall objectives:⁴

- Preservation of the forest (not in the sense of maintaining it in its natural state, but conserving and maintaining a forest resource in general);
- Ensuring the use, protection and recreation functions of the forest by optimal production of wood, maintenance of the protective effects of the forest on the environment and maintaining and increasing the social benefits of the forests for recreation and social well-being.

Forest policies of other states would be similar in content.

At the same time that policy is dictated by political and professional aspects, environmental limitations play a greater role in policy formulation in the United States than in Germany. The forest areas of the United States involve extensive areas of low quality sites incapable of sustained economic timber production or strict multiple-use management,³¹ while the forests of Germany, for all practical purposes, are all capable of sustained yield production because of overall site quality.

As a profession, forestry in Germany has had a long tradition. Even before the beginnings of scientific forestry around the middle of the 18th century, hunter-foresters were carrying out empirical forest practices for the sovereigns.²⁵ In the United States, professional forestry is relatively young, gaining stature first around the beginning of the 20th century and profiting from the knowledge already accumulated in Europe, even if practices had to be adapted to American conditions. This centuries-long history of forestry in Germany is important to the continued management of forests because of the wealth of information gained regarding effects of management techniques. In the United States, on the other hand, in many areas no precedents have been established yet to determine the cause-effect relationship of certain management practices. The long time span involved between establishment and harvesting forests makes forest history a vital element of consideration in decision-making processes.²⁵

6.2. Means

The administrative framework for carrying out the policies developed by the institutional processes are well developed in both the German and the American societies. Management responsibilities are spread over many individual agencies in the United States, but if one peruses the forestry accomplishments in silviculture, timber production, reforestation, etc., efforts have been directed in much the same direction in the United States as in Germany.^{12, 36}

Greater intensity of forest management is the rule in Germany, with the lowest administrative echelon - the

Forest Office - responsible for an area a fraction of that of a District Ranger in the United States. Although the degree of intensity varies, management of the forest resource for the various products follows the same basic pattern in both countries, except that range management is non-existent in Germany, while in the United States forage is a principal product of about one-third of the National Forest System lands.³⁸ Intensive management for timber production in the United States, which would approximate the intensity of management found generally in Germany, could be best described as that occurring on private industrial forest lands and the efforts undertaken for the "South's Third Forest". As timber markets expand and greater public interest is shown in recreation, esthetics, wildlife and other values of the forest, more intensive application of the silvicultural systems developed for the 37 major forest types in the United States can be expected, but the choice of system may have to depend on the influence of these non-timber values.³⁵

Environmental protection is prevalent in both countries, but would be more intensively applied in Germany, where nearly ten percent of the forest area of Baden-Württemberg - the first state to develop criteria for delineating special-purpose forests - has been designated as requiring special management considerations for erosion prevention and protecting water supplies.³ Recreation, watershed and wildlife management have become highly specialized fields in the United States, whereas they have tended to remain integrated in the general forestry concept in Germany.

Seen from a national point of view, enveloping the total forest resource of the nation, the forests of both

countries are under a multiple-use system of management. On a less extensive scale, multiple-use has been relegated to a secondary position to that of special purpose. This is true in Germany as well as in the United States. Natural limitations and human inputs have both required the delimiting of certain forest areas as special purpose forests. For example, national parks and wilderness areas in the United States have been legally declared as special purpose areas, while in Germany nature parks and reserves, landscape protection areas, and research areas have legal limitations of use. Natural limitations are more pronounced in the United States, where about a fourth of the total forest land is limited to management for non-timber because of its low site quality.³⁴

Other features of the physical environment of the two cultures require variations in allocation of the means. For instance, a spectrum of natural forest conditions in the United States necessitates the development of greater diversity in management practices to accommodate the variegated forest conditions, while natural prerequisites are more homogenous in Germany. Also, extremely arid conditions in parts of the Western United States create forest conditions highly susceptible to wildfires which helps to account for the percent of the total forest area burned in the United States being 17 times that of Germany in 1960 - a year both countries experienced heavy forest damage.^{12, 33} This would indicate more of the total means must be allocated for forest fire prevention and suppression in the American forestry ideology.

Another variation of the means in the two forestry

ideologies is the organizational system of timber selling and harvesting. The common practice in the United States is to sell the standing timber which is then harvested and transported by the buyer. In Germany the timber is felled by the owner, or under contract, the sale being consummated only after the timber has been skidded to the landing and prepared for final transport, for which the buyer is responsible. Although the German system allows closer supervision and control of the actual operation, it requires more machinery, expertise and time of the owner; and it is a system unique to only a few other European countries.

6.3. Utilization

With 90 percent of its total area in forests, a greater proportion of Germany was originally forested than was the case when Europeans first arrived on the shores of the western hemisphere, the impact of previous human activity on the natural forest resource of the United States remaining a mystery. The reduction of the forest areas to present levels - Germany, 29 percent; the United States, 33 percent - occurred through the same process of settlement, mainly by clearing for agriculture. Today the situation remains quite similar in both cultures in that marginal agricultural lands, once bearing forest cover, are again being reverted to forest use.^{12, 36} One basic difference in the history of the utilization of the resource is that German forests have experienced millennia of human activity, while those of the United States have been impacted only for a few centuries.

6.3.1. Timber

Application of the means for utilizing the nation's forest resources has been and continues to be a point of contention in both cultures. Utilization of the resource for timber production led to the practice of clearcutting and artificial regeneration of the site. This approach to wood production was already under fire in the 18th century in the Black Forest of Germany,³⁰ was protested upon initial introduction in New York State forests early in the 20th century in the United States and remains a center of controversy today. Yet, the clearcut system of management has proven to be a necessary and desirable method of forest land utilization, under many forest conditions, for natural as well as economic reasons, and is not unlike intensive agricultural practices to attain high yields. Both have the same objective of growing crops in the most efficient means by transforming soil fertility into raw materials for human consumption.¹⁷ Ninety-nine percent of the forests of Germany are harvested in this manner.¹² In the United States, 30 percent of the western and 40 percent of the eastern area logged in the National Forest System were harvested by some form of clearcutting.¹⁴

The issue of clearcutting centers not so much around the practice itself, but around the judgement of its application, mainly for aesthetic reasons. Clearcut harvests in Germany, as a rule, are only from 0.5 to 5 hectares in size⁴²; in the western United States they may often stretch over hill and dale, a practice receiving severe scrutiny and being limited in some cases to 10 hectares.³⁶ Although clearcutting is generally accepted by the public in Germany, it does receive some

criticism, particularly around urban forest areas. But the practice is by no means as controversial as the current wave in the United States. As wood prices continue to climb and application of the means modified in the United States, it can be expected that the size of the area harvested will show a corresponding decrease and the harvest area will take on the form of natural openings in the forest which are more pleasing to the eye.

Timber stand improvement operations in middle-aged stands is the rule in German forests, all but the smallest stems considered merchantable; the result is a park-like appearance in many of the forests. In the United States thinning of young stands is often non-commercial in nature and is not as prevalent, especially on smaller ownerships. On small woodlands timber stand improvement ranks second to planting, probably because planting is subsidized in various ways, promoted more and easily understood, whereas stand improvement measures usually need the expertise of a forester to recognize the opportunities to implement techniques and see the work through to completion.¹ Consequently, American forests take on a more "unmaintained" appearance compared to those of Germany.

While clearcutting and artificial regeneration has reversed the hardwood to conifer proportion of forest cover in Germany, large-scale clearcutting and natural regeneration has left most of the forests of the United States in a less productive, but more natural state. Variation in tree species remains more pronounced in American forests, but in a given area the effect of small-scale clearcutting and even-aged

management gives a more varied forest picture in Germany, where small patches of hardwood and conifer, seedling to mature timber, are found in close association. Nevertheless, under the conditions found either in the United States or Germany, utilization of the forest resource for timber production can be accomplished concurrent with the maintenance of non-timber values.

6.3.2. Special Purpose

Having been subjected to human activity for millennia, the forests of Germany are devoid of true virgin forests today. But steps have been taken to restore and maintain specimens of the original forest cover by establishing a system of forest preserves (Bannwälder), ranging in size from one to over 100 hectares and encompassing a wide variety of forest conditions. Forty such areas, with an aggregate area of 1400 hectares, have been delimited in Baden-Württemberg.² Public access, hunting, and disease and insect protection is allowed, but no other practices may be conducted on these preserves, serving the primary function as educational and research areas.¹⁵

Additional land areas in Germany have been put under some form of protection, falling under the various classification of 'Naturschutzgebiet' (nature protection area/ nature preserve), 'Landschaftsschutzgebiet' (landscape protection area), 'Naturpark' (nature park) and 'Erholungsgebiet' (recreation area). Many of these designated areas include a substantial amount of forests. For example, two-thirds of the area of the nature parks (figure 14) consists of forests, taking in a third

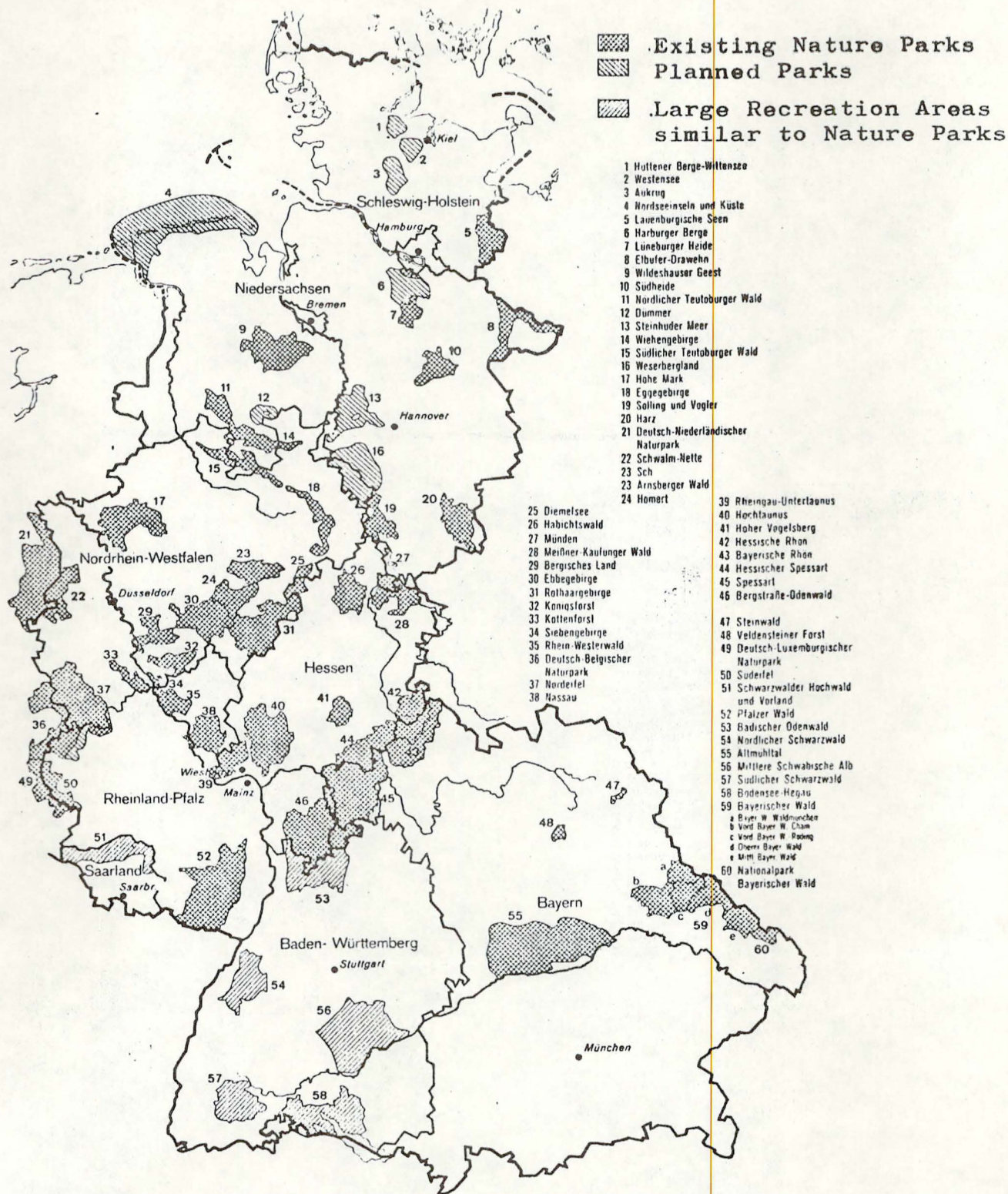


FIGURE 14

NATURE PARKS AND RECREATION AREAS OF GERMANY

Source: Tamms, Friedrich and Wilhelm Wortmann. 1973.
 Städtebau. Carl Habel Verlag, Darmstadt.

of the total forest area of the Federal Republic.^{24, 44} Recreation areas are similar to nature parks, not having been declared as such for administrative reasons in Baden-Württemberg. What began as three established parks in 1958 has developed into a nation-wide system of the presently 53 nature parks, covering 15 percent of the total area of Germany; foreseen is 80 parks taking in 25 percent of the total area of Germany.²⁷

Nature preserves and landscape protection areas numbered over 7000 in 1967, extending over 15 percent of the area of Germany. Generally smaller in area and often included within the nature parks and other protection areas, nature preserves have strict limitations on the management activities that can be carried out, in essence, having about the same restrictions as forest preserves; that is, virtually left to natural elements except for necessary protective measures. These areas compose more than one percent of the total area of Germany.

Landscape protection areas and nature parks have little restriction on management as long as the environmental quality is unaltered and the natural beauty is maintained. This amounts to keeping harvest areas small, but species selection for reforestation remains unaffected. In addition, there is the requirement to have authorization to alter the land-use pattern such as clearing and afforestation.^{24, 42}

All these aforementioned special purpose areas of Germany have their legal basis in the Reichsnaturschutzgesetz of 1935. While the forest and nature preserves are quite small in area and meant to serve scientific and educational uses, the landscape protection and recreation areas, and the nature parks

are large-area, significant cultural landscapes which are characterized by their natural qualities, beauty and suitability for recreation.^{24, 27}

Similar in character to the nature parks is the "Nationalpark Bayrischer Wald" (Bavarian Forest National Park), an area of 13,000 hectares in southeastern Germany which was established in 1970 as Germany's only "national park" (figure 14). The park consists of mostly forest lands that have seen centuries of intensive management and continues to be harvested. Nevertheless, with time it is to revert to its original forest cover and be maintained as a natural forest area which would eventually decipher it from a nature park. Established with the American national park concept in mind, the Nationalpark Bayrischer Wald has been developed along the same lines, complete with visitor centers, remote areas, nature trails and prolific information.⁷

National Parks of the United States have, from the initial setting aside of Yellowstone National Park over a century ago, evolved to a National Park System numbering 34 with a gross area of about five million hectares in the 48 contiguous states in 1972. Other areas which include substantial amounts of forests and are administered by the National Park Service are national scenic trails and riverways, and national parkways, monuments and recreation areas. The gross area of these areas involve some 5.6 million hectares and together with the national parks comprise most of the land administered by the National Park Service, or 1.3 percent of the total land area of the 48 states.⁴⁰ National parks, as well as many other areas of the National Park System, are managed as "outdoor museums", with preservation of their highly significant natural, scientific

and inspirational qualities a basic concern. Thus, in national parks public hunting is not permitted, timber and other resources are not commercially utilized and certain recreation activities and facilities are not allowed.¹¹

By contrast, national forests are utilitarian in nature, managed under the multiple-use - sustained yield concept and comprise about 75 million hectares or almost 10 percent of the total land area, in 152 units throughout the 48 states¹¹ (figure 15). Yet, by administrative regulations of the Chief of the Forest Service, vast areas of the National Forest System had been designated for special purposes under various classifications since early in this century. The aggregate area of these Primitive, Wilderness, Wild and Canoe areas totals 5.8 million hectares in 88 units throughout the National Forest System.^{11, 32} With the passage of the Wilderness Act in 1964, establishing the National Wilderness Preservation System and stipulating that all wilderness, wild and canoe areas are to be automatically included as the nucleus of the system, four million hectares of natural forest lands were protected by law from modern developments and commercial utilization of resources.¹⁰

At the same time, the Wilderness Act stipulated that by 1974, all primitive areas in national forests, and undeveloped portions of lands with a minimum area of 2000 hectares administered by agencies in the Department of Interior, were to be evaluated for inclusion in the National Wilderness Preservation System. Consequently, there is potential for inclusion in the NWPS of the 48 states, lands of: The Forest Service -

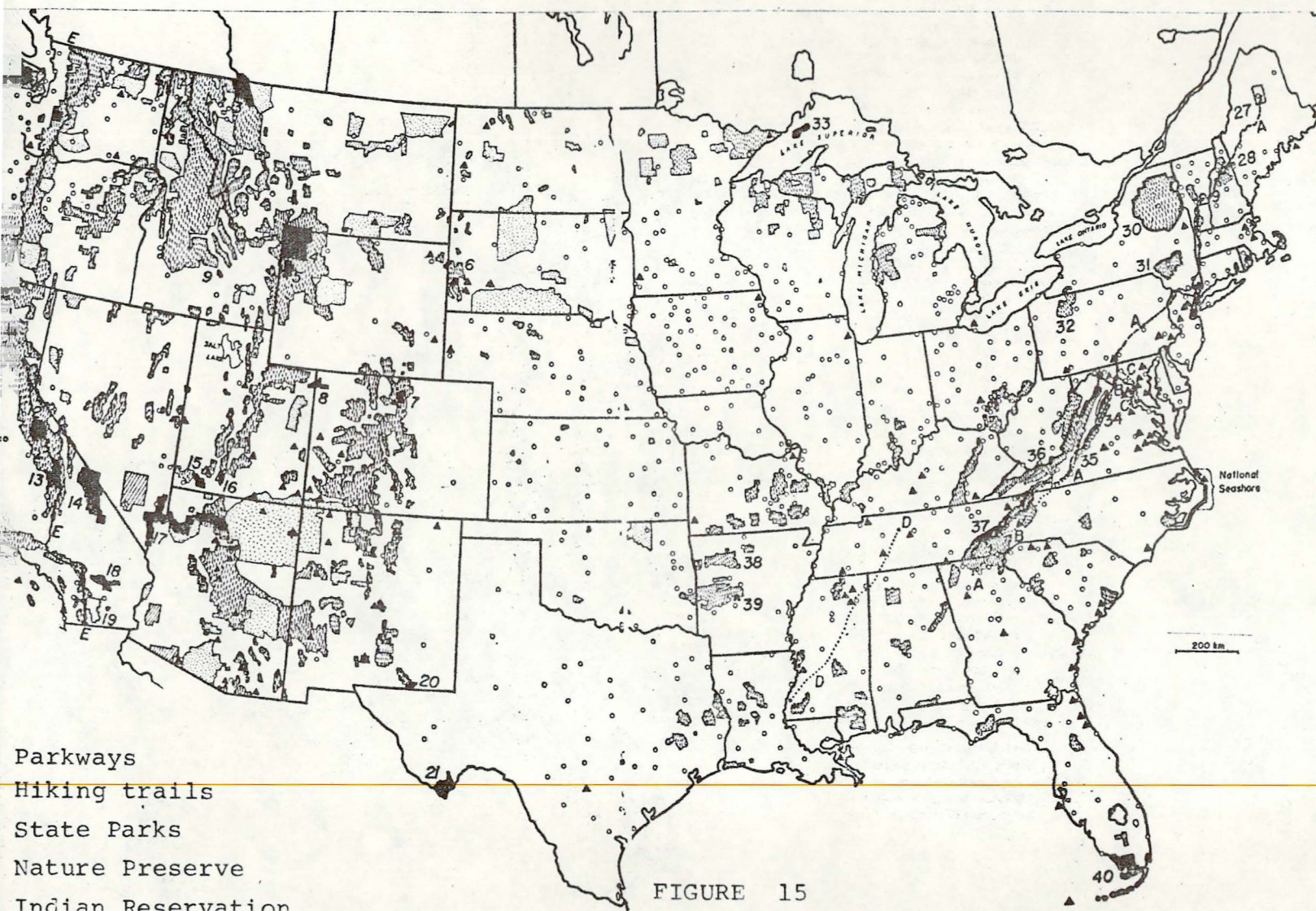


FIGURE 15

PARKS AND FORESTS OF THE UNITED STATES

Source: Strzygowski, Walter. no date. Naturparke der USA.
 Verein Naturschutzpark, Stuttgart-Hamburg

4 million hectares in current wilderness, 1.8 million hectares primitive areas and 2.8 million hectares de facto areas; and the Department of Interior (National Park Service, Bureau of Land Management and Bureau of Sports Fisheries and Wildlife) - 9.7 million hectares.³² Together, these lands would create a wilderness system of 18.3 million hectares - over two percent of the area of the United States - which would be limited to special purpose utilization.

Varying in size from one to over 50,000 hectares, a system of rare ecosystems, numbering over 300 units, has been developed in the United States to preserve examples of diverse forest conditions and other ecosystems, primarily for purposes of science, research and education. Efforts are also underway to identify and designate additional areas on non-federal public lands and private holdings, as well as federal lands.^{23, 39} Relatively small in area, natural areas could be likened to the forest and nature preserves of Germany in their function.

Still, if one attempts to correlate the utilization of the forest resources in the United States and Germany, from a management standpoint, only the nature and forest preserves (about one percent of the total area of Germany) have full protection from commercial utilization, all other areas having only minor restrictions on management activities. In contrast, all the lands falling under the national parks, natural areas and national wilderness system are restricted from commercial use. Since some areas under study as potential wilderness in the Department of Interior are already included in the present National Park System, there is some over-

lap in the areas covered by each system. Yet, if only the areas of the national parks (5 million hectares) and those present and potential areas of the national forests in, or under review to be included in, the National Wilderness Preservation System (8.6 million hectares) are taken into consideration, the aggregate area of these two systems alone is over half the total land area of Germany, or about two percent of the USA.

It must be kept in mind that not all of these 14 million hectares are forested or productive forest lands; nevertheless, as a conservative figure, not including natural areas or other lands under study for inclusion in the NWPS, it seems safe to assume that the eventual total area of forests set aside for non-commercial use in the United States will be double the total forest resource of Germany and would include over four percent of the productive timber lands of the United States.

Viewing utilization from the ownership side, one finds all the special purpose lands in the United States located on public federal lands, while those in Germany cut across all types of ownerships, the land holder being compensated for any economic opportunities foregone.

6.4. Products

Wood remains the most important forest product in Germany and the United States. But the public lands in both countries are assuming greater roles in non-timber values, while at the same time more intensive efforts are directed at increasing the timber productivity of the small woodlands. Although forage is produced in the

forests of Germany, a distinct separation of forest and grazing land is made. This is mainly a result of adverse experiences in previous centuries and, consequently, is not officially condoned today. Wildlife and water always have been important elements of the forest environment and, as is the case for forest recreation, have taken on increasing values as demands for these products rise in the industrialized societies. Since the national forest resources of both societies are capable of producing all these benefits in a given amount, the goals of each society determine the final mix of the products.

6.5. Goals

Long range endeavors in Germany and the United States are directed at obtaining the proper combination of quantity, quality and type of all the forest products, as can be seen in their respective policy guidelines. As far as forage is concerned, no consideration will be given to this element in Germany in the future, but will continue to play an important role in the United States as a principle forest product. Other than this exception, both countries are employing the multiple-use concept on a national scale to achieve the goals of their societies, but are concurrently delimiting portions of the total forest resource most suitable to meeting special demands.

It is an obvious feature in both cultures that some forests are capable of producing many of the goods and services for society simultaneously while others are naturally limited in their capability. Environmental protection has become a household word in both societies, with intensive efforts directed at maintaining the natural

environment in its highest quality, but at the same time maximizing benefits from the total forest resource by not only delineating land use, but forest land use to attain these goals.

An apparent trend in Germany is to legally open private forest lands to the public by prescribing what is expected of the public which gains access to the property and at the same time, having society bear the costs for any damages inflicted upon the property and for some economic benefit foregone by the owner. This is an element in several of the new state forest laws of Germany and could eventually be a feature in the proposed federal forest law, the goal being to assure all forest lands of the nation are accessible for recreation purposes even though private forest property does not dominate and it is customary not to prevent trespassing.¹⁸

With a vast forest resource at its disposal, the United States is still in a position to reserve large tracts for non-commercial use, even though there is a smaller percentage in public ownership than is the case in Germany. On federal forest lands not affected by special purpose restrictions, societal demands further insist that environmental amenities be maintained, the goal being in both instances to provide suitable recreation environments.

In both societies, it is evident that heavy emphasis is placed on forest environments for satisfying the recreation needs of the people while still keeping an adequate flow of other forest products. Political, social and economic forces unique to each society have and will dictate the approach taken to attain the goal of providing sufficient

forest recreation resources for the individual culture;
it is the intent of the remainder of this study to
look at these vectors and influences as they effect one
element of the forestry ideology - forest recreation.

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PART III

FOREST RECREATION IN THE GERMAN AND AMERICAN SOCIETIES

Having looked at the overall structure and physical environments of the German and American societies in Part I and gained an insight to their respective forestry ideologies in Part II, a reasonable framework to the two cultures has been established to study the facets of forest recreation in both societies. The purpose of this part of the work, then, is to explore for the two cultures such things as: How the forest recreation phenomenon evolved; how it is being pursued today; the approaches taken to supply forest recreation resources; where the forest recreation resources are located; and, finally, whether the needs and aspirations for forest recreation are being satisfied.

CHAPTER 7

PERCEPTIONS TO FOREST RECREATION

Suitable environments for recreation have always been produced by forests, but only in relatively recent times have these benefits gained a stature of more importance equal to the many other goods and services provided by the forest environment. Nevertheless, forests were recognized as a recreation resource long before the modern "explosion" ensued.

7.1. Forest Recreation in Historical Perspective

The settlement and development of the United States had much in common with the trends which occurred in Germany, with one exception: It all happened ten times faster and later in the United States. But in all phases, the same basic attitude of the people toward the forest could be observed in both cultures.²⁶

7.1.1. In Germany

At the beginning of industrialization, all middle European nations had little forest and wood supplies; thus, the forest served the primary purpose of supplying timber and wood by-products - an economic function. However, the protective values of the forest were recognized already in the Middle Ages, with forest areas for such purposes reserved since the 13th century. Welfare, social and recreational benefits of the forest, as viewed by modern society, were not known in that era, aesthetic values first being perceived around the 18th

century.¹⁷

Forest recreation of any significant magnitude was confined to the upper class structure of society, taking place mainly in the form of the "chase", a feudal activity which put the wildlife of the forest on a higher rung than that of timber production, especially during the latter half of the 17th century.³² Records also indicate isolated cases where the forest was considered as an environment for early recreation. For example, portions of the Reichswald (empire forest) by Nürnberg (also noted as being the first forest where artificial regeneration was applied by sowing conifer seeds in 1368²³) were used for holding special social events already in 1372 - 600 years ago;² the Frankfurter Stadtwald (city forest) fulfilled similar early recreation functions as the Reichswald, primarily for the elite of society;³³ and, concern over forest aesthetics was voiced by prelates in the 18th century when the seed-tree clearcutting method was introduced to supplant the unregulated selection system in the Black Forest.³²

First pertinent writings concerning forest aesthetics appeared in 1824, when "Forstmeister" W.F. Freiherr von der Borch of Bavaria suggested the maintenance of scenic quality around such cultural features as castle ruins; protecting wells, streams and springs; cutting to open prominent natural features as rock crags; and introducing exotic tree species for variability. These ideas are as valid today as they were a century and a half ago, but remained the only mention of forest aesthetics until 1849, when "Oberforstrat" G. König of Saxony included information on forest beautification in his book "Die Waldpflege" (Forest Care). Other writings followed

throughout the latter part of the century which included forest aesthetics and the influence of the forest on the environment and welfare of society. In the renowned work of H. von Salisch, "Forstästhetik" (1885), much of this earlier knowledge and experience was compiled and an attempt made to separate the responsibilities of the forester and the "Landschaftsgärtner"²² (landscape architect).

More important from the practical standpoint, as far as recreation is concerned, were the concepts of "Forstrat" Wappes, who, in 1887, advocated visitor counts and the delineation of recreation forests, which fell into three groups: Forests in the vicinity of cities; forests around summer resorts and spas; and forest complexes of aesthetic value along tourist routes. Wappes also proposed a plan for implementing management for such recreation forests and recommended close cooperation with hiking clubs; but it was to be 70 years later before his suggestions became reality.²²

By the turn of the century, pressure to designate forests for recreation had increased, but to no avail. In 1901, two proposals to delimit some forest areas of a forest cooperative for recreation purposes were rejected, and in 1905, at a Saxony Forestry Society meeting, a proposal that pure economic gain should be secondary to recreation values in forests near cities and spas was also defeated.²² An example of the prevailing atmosphere at the time is noted in discussions at the "Hauptversammlung des Deutschen Forstvereins" (Main meeting of the German Forestry Society) in 1906. Salisch, proposing that forest aesthetics should be included in curricula at the universities, was refuted as suggesting that the

forests be managed by feelings instead of by real, thoughtout forestry.¹ At this time, the German foresters and educational institutions were proud of their efforts over the last century which brought economic success, whereby not only the forest itself had been preserved from destruction but increased demands for industrial wood had been met.¹

Still by the beginning of the 20th century, prolific literature and the national park idea continued the pressure for setting aside natural areas, resulting in a state office for natural monuments being established in Prussia in 1906, mainly through the efforts of Hugo Conwentz, who based the necessity for the protection of nature on scientific terms.¹ Further impetus was given to reserving areas for recreation with the founding of the "Naturschutzpark Verein" (Society for the protection of nature parks) in 1909 and the Reichsnaturschutzgesetz of 1935, but concentrated efforts directed at delineating relatively large landscape areas for recreation purposes were not forthcoming until around 1955.¹⁶ From the beginning of the "Naturpark" (nature park) program in Germany, it was clear that the nature parks could not be patterned after the national parks of the United States.²⁹ Nevertheless, the intensive efforts in the last two decades have seen a substantial portion of the landscape in Germany set aside for recreation purposes. The recent state forest laws and proposed federal forest law are vivid indications of the role of the forest in Germany's industrialized society today.

7.1.2. In the United States

Reserving Yellowstone National Park in 1872 is often regarded as the beginning of the American conservation movement, but records indicate many earlier manifestations of public interest in regulating the natural resources of the United States. The Massachusetts Bay Colony, by enacting the Great Ponds Act in 1641, decreed that individual bodies of water, with an area in excess of four hectares, encompassing a total water area of some 36,000 hectares, were to remain as a resource forever open to the public for "fishing and fowling".⁴ Another major event occurred in 1832, when Congress passed an act reserving some 1000 hectares of land in the Ouachita Mountains of Arkansas, an area which was incorporated into the National Park System in 1921 as the Hot Springs National Park.⁴ But the first extensive area of wild land to be set aside by the federal government primarily for public recreation was the Yosemite Grant in 1864, which entrusted the administrative authority of the Yosemite Valley and the Mariposa Grove of Big Trees to the state of California, with the special conditions that the premises be held "for public use, resort, and recreation".²⁸ This area was also declared a national park in 1890 as the second addition to the National Park System.

While the aforementioned actions occurred at the state and federal levels of government, local governments also made early contributions in establishing areas for recreation purposes. One of the most noteworthy examples is the Boston Common, serving as a recreational area since 1634. William Penn also reserved several tracts for public use within the city of Philadelphia in 1682 and James Oglethorpe was guided

by similar ideas in laying out the city of Savannah, Georgia, in 1733. Large open areas were also included in the planning of Washington, D.C., in 1791; New Amsterdam, forerunner of New York City, in 1732; Chicago, in 1839; Salt Lake City in 1847; and most early Spanish developments, where the plaza was common. One of the most significant municipal parks in the United States is Central Park, established in 1853 and acquired largely by municipal land purchase exclusively for public recreation.⁴

These non-utilitarian values of resources began appearing on a national level around the beginning of the 19th century from such notables as Daniel Boone and James Hall, and continued to be expressed throughout the century in the works of Emerson, Thoreau and a host of American scientists. An enthusiasm for primitive conditions developed gradually during the 18th century through a change in aesthetics, and manifested itself in a form of Romanticism during the 19th century. Most people during this era regarded the wilderness as a raw material to be conquered, subdued and generally inexhaustible. Only a few had foresight enough to realize that wild America would vanish without action to preserve it. The first known plea in this respect was by George Catlin, whose letters proposing the preservation of beauty and wildness "in a magnificent park" were published in a widely circulated and influential newspaper in 1833, initiating the national park idea.^{4, 28}

First in the same year as the Yosemite Grant in 1864, did preservation of forests for their value as flood and erosion control, and for civilization gain impetus

through George Perkins Marsh's book, "Man and Nature". This awareness, coupled with the precedent of setting aside the smaller tracts in Arkansas and California, laid the groundwork for creation of Yellowstone National Park in 1872, an area encompassing over 900,000 hectares of wilderness, waterfalls, lakes and geysers, and an act which became renowned throughout the world.²⁸

Thirteen years later another milestone was reached in American forest recreation, when the State of New York reserved 283,000 hectares of forest land in the Adirondacks in the northern part of the state as "wild forest lands".²⁸ Reserved initially mainly to protect the watershed supplying water for New York City and the Erie Canal, the original area has increased in size to over one million hectares today, including a state park established in 1892.⁴⁰

Creation of the Yosemite National Park in 1890 is deemed the first action taken to preserve wilderness with intent. Reservation of this 414,000 hectares-area, which enveloped the earlier 2600-hectare tract under the administration of California, came about in part by the persistent efforts of John Muir, who helped organize the Sierra Club in 1892 to enlist support for preserving forests and other natural features of the Sierra Nevada Mountains.²⁸

The establishment of national parks, combined with a growing fear of the consequences which could result from the rapid depletion of forest resources, laid the foundation for the National Forest System initiated under the Forest Reserve Act of 1891.¹⁰ While extensive wilderness areas continued to be reserved throughout the 20th century in the National Park System,

The U.S. Forest Service took a radical departure from normal forest policy in 1924 by beginning to set aside wilderness areas within the National Forest System by administrative orders of the Secretary of Agriculture, a policy that eventually reserved over 4 million hectares of national forest lands from development and formed the nucleus of the National Wilderness Preservation System forty years later.

This American ideology that wilderness has important and irreplaceable non-economic values is exemplified by the events at the turn of the century. While B.E. Fernow was a strong advocate of forest reserves, a major figure in early American forestry and the first professional forester in the United States, he also was of the opinion that aesthetic and recreational aspects of forestry should only be incidental to the wholly utilitarian and technical art of forestry based on economic principles.³⁰ In an attempt to carry out these intensive forestry principles on a trial basis in the demonstration forest of the New York College of Forestry at Cornell, he was engulfed in a wave of protests from the public. Although Fernow expected to try out many methods of cutting, the first sale called for clearcutting the hardwoods with subsequent planting of spruce. This was not the average layman's concept of forestry and the resulting public pressure and criticism, although not aimed at the instructional work at the School, led to the closure of the Forestry School for a period of years.⁸

In 1933, the federal government embarked on an experiment "of planning for the proper use, conservation, and development of the natural resources of the Tennessee

River drainage basin and its adjoining territory ..." by establishing the Tennessee Valley Authority (TVA) as an independent, government-owned corporation. Originally designed to reconstitute the degraded environmental conditions causing floods and soil erosion in the river basin, the TVA has become renowned for its work in natural resources management and, especially since the post-war years, has become a major recreation area, with forests covering more than half of the area of the Tennessee Valley.³⁹

Other pertinent events showing the role of forest recreation in the United States during the first half of the century are manifested by the National Park Service being tasked by a 1936 Act to make a comprehensive study of public park, parkway and recreation area programs of the United States, and the Forest Service publishing in 1940 a comprehensive report on forest recreation, "Forest Outings".⁸

Since the beginning of the present half century, the prolific legislation relevant to forest resources makes it abundantly clear that forest recreation continues to be a prominent concern in the American Society as evidenced in: The Multiple-Use - Sustained Yield Act of 1960; the Wilderness, and the Land and Water Conservation Fund Acts of 1964; the National Trails System, and the Wild and Scenic Rivers Acts of 1968; the National Environmental Policy Act of 1969; and the Forestry Incentives Act of 1973.⁴¹

7.2. Recreation Terminology

Discussion about recreation matters has been plagued by much misunderstanding and vagueness, to large extent because the same word means quite different things to different people, not only within a culture, but also interculturally. For this reason, a few definitions seem desirable to assure a proper perspective as to the context within which the terms are applied in this study, especially since the discussion transverses cultural lines.

7.2.1. "Muße" - Leisure, "Freizeit" - Free Time

The problem of defining terminology frequently applied in conjunction with sociological applications of forest recreation is a feature found in both cultures of the United States and Germany.^{5, 6, 7, 12, 14, 18, 19, 27, 35} Some authors go to great lengths in trying to bring the terms into proper perspective,^{7, 9, 15, 31} but apparently the expressions of "Muße" (leisure) and "Freizeit" (free time) can be directly translated,^{6, 11, 24, 27, 36} the problems of definition being common within both cultures and not interculturally; consequently, defining the terms as used here would be valid for the respective terms in both societies.

Seen from a general view, leisure competes with work for time - as one increases, the other decreases. This would be true for the individual and for the society as a whole. But in addition to work and leisure, a third area requires a certain amount of time of an individual - his biological necessities for existence, such as eating, sleeping and personal hygiene. There-

fore, three basic blocks of time are represented - existence, subsistence and leisure; the time required for existence, or biological requirements, would vary from person to person, but remain relatively constant for each individual over time; subsistence time, or that time needed for economic necessities, may vary greatly from person to person as well as from day to day; time for leisure would be that time left over after the other two requirements have been fulfilled - a condition or state wherein an individual is free from all other obligations and necessities. The difference being relatively minor, leisure time and free time are considered synonymous expressions in this study.

7.2.2. "Erholung" - Recreation

Similar to the elusiveness of leisure and free time, recreation has also evoked much discussion in both societies.^{3, 5, 6, 11, 14} Again, the terms can be literally translated, definitions being problematic intraculturally. Although sometimes thought of as a medical term in Germany¹¹, as it is used here recreation denotes any activity or experience - motions or emotions - which: Involves the individual directly; is participated in voluntarily; occurs during leisure; is motivated by enjoyment and satisfaction in contrast to material gain; and is beneficial to both the individual and society as a whole. No sharp lines delimit recreation from other activities. What is work to one, may be recreation to another.^{6, 11, 19, 37}

7.2.3. Leisure and Recreation

According to the above discussion, leisure is a state or condition; leisure time or free time is the duration of this state; and for any activity or experience to be considered recreation, it must occur during leisure. Time is one element that every human has in equal amounts, but the use of it varies greatly from person to person. Still, some idea of the average time spent in the three basic categories mentioned above can be seen in the comparative statistics of various countries, in which the United States and the Federal Republic of Germany were included.

In summarizing the use of time for different activities in the Federal Republic of Germany and the United States in 1966 for all adults in average time per day of a week as presented by Scheuch³⁷, one finds the three segments of time according to the above scheme similar in both societies:

	Germany	United States
existence	11.2 (hours)	10.3 (hours)
subsistence	8.1	8.1
leisure	4.7	5.6
	24.0	24.0

Existence includes time for personal care, sleeping and eating; since the data covered all adults, in addition to work, subsistence includes time for child care, shopping, housework and travel for work; leisure comprises time for such main activities as mass media,

socializing, sports, hobbies, etc. In no case did the time difference for a particular activity between the two cultures exceed one-half hour, indicating very similar usage of leisure time.

Not only is the total amount of leisure important for recreation planning, but also the size and timing of the blocks of leisure by which it occurs. Taking the average free time of workers as being three hours on workdays, seven hours on Saturday and 8 hours on Sunday, with a 40 hour workweek and 20-day vacation, the total yearly free time would occur as 31 percent daily, 52 percent on weekends and 17 percent during vacations.¹³ Although over half of the annual free time would fall on weekends, not all people would use this time in the same way. For instance, it has been estimated that on any given weekend in Germany 25-30 percent of the people stay at or near home.¹⁷ Clawson and Knetsch approach the problem similarly in the United States.⁶

If a block of time is at one's disposal, it does not mean that one is participating in recreation. Leisure presents the opportunity (time) for recreation to take place, but merely dwelling in idleness (involuntarily) is not considered recreation. In this respect, recreation is usually distinguished from amusement, time-filling and low quality participation.¹⁹ Accepting the definition that recreation should be wholesome for the individual as well as society, then some activities (or inactivity) occurring during leisure may have a detrimental effect on the individual and society.

This feature of utilizing leisure time poorly or wisely is demonstrated by establishing a hierarchy of

potential values for society and the individual. Based on the original concept of Nash²⁷, figure 16 shows that when one is free to choose what he does during leisure, the effect of his pursuit may be recreational or non-recreational. Moreover, this hierarchy of values indicates a degree of satisfaction that can occur in the pursuit of recreation, implying the quality of an experience or activity.

7.3. Classification of Recreation

Obviously the term recreation covers an extensive field, necessitating further narrowing of the scope in which the term is applied and qualifying its use.

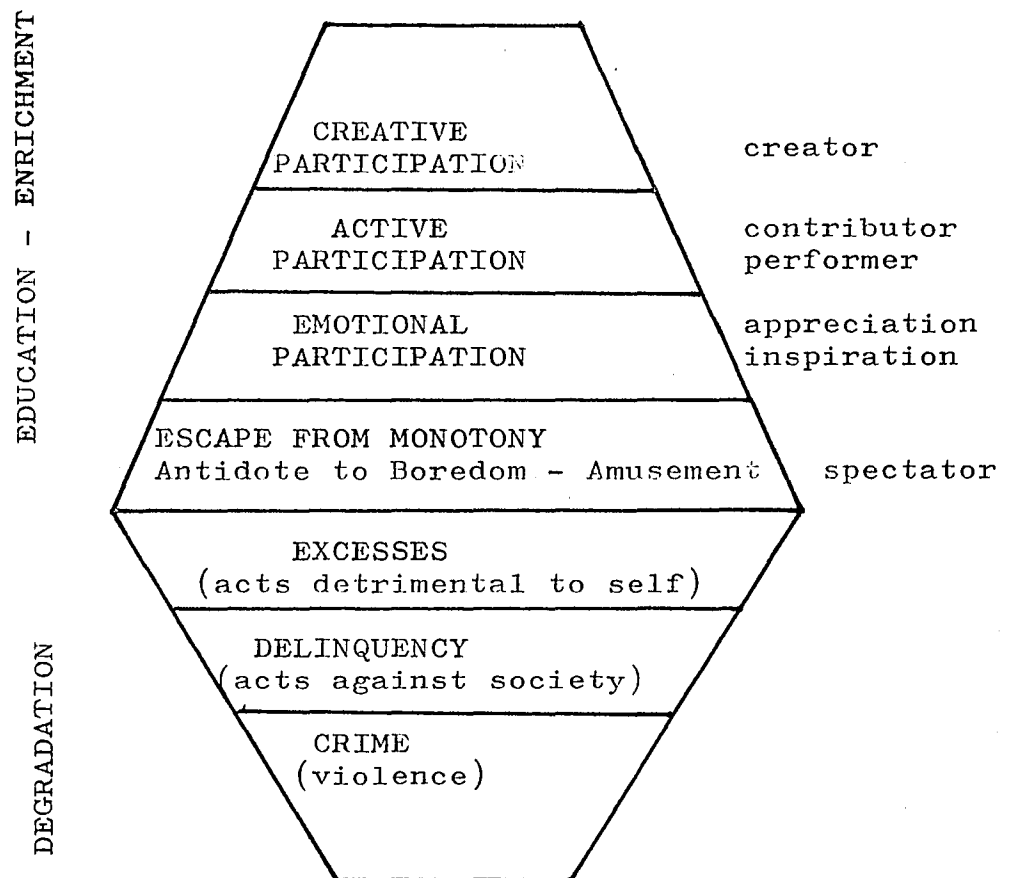
7.3.1. Outdoor Recreation

Contrary to the case where leisure, free time and recreation could be directly translated between the German and English language, further qualification of the term "recreation" shows a lack of cross-cultural terminology. Outdoor recreation, an expression in common usage in the United States, has no equivalent in the German language, but has been translated as "Erholung im Freien".²⁵ Apparently the German people have not found it necessary to segregate recreation as they have facilities, such as "Freibad" (outdoor swimming pool), "Hallenbad" (indoor swimming pool), "Freilicht Theater" (open-air theater), etc.

Outdoor recreation, as opposed to indoor recreation, is nothing more than that recreation which is typically carried out in outdoors, and obviously requires space

FIGURE 16

HIERARCHY OF HUMAN VALUES DURING LEISURE TIME



Source: Nash, J.B. 1964. Philosophy of Recreation and Leisure. W.C. Brown, Co., Dubuque, Iowa.

and resources, often large quantities of both, for its enjoyment.^{6, 19} Though there are some borderline cases, such as basketball or track events, which can be conducted indoors and outdoors, outdoor recreation normally refers to recreation activities occurring in a natural environment and relating directly to that environment, the enjoyment gained thereby depending on the use of the natural environment whether or not facilities are provided for safety, health and comfort.¹⁹

7.3.2. Forest Recreation

Although no equivalent term for "outdoor recreation" has been coined in the German language, "Walderholung" (forest recreation) is a household word. The myriad of political and socioeconomic factors affecting participation in outdoor recreation and development of outdoor recreation resources are also the same basic elements influencing forest recreation. Therefore, population dynamics, amounts and characteristics of leisure time, transportation factors, income, education and so forth, all subject a society's forest resources to similar pressures as would be the case for non-forest outdoor recreation resources.

When speaking of forest recreation, it should be kept in mind that the term also encompasses related natural environments. For example, a lake or reservoir located within a forested area would be related to the forest environment, while even though the activity may take place in or on the water, the forest is a part of the natural setting.

No sharp lines can always be drawn as to what part of an

activity occurs directly in the forest and that which takes place in a related environment. While certain natural landscapes and activities are quite easily delineated from the forest sector, others overlap to a large degree. An ocean beach, the vast prairie or parts of the arid and semi-arid regions of the United States are all non-forest environments, but contribute greatly to the overall outdoor recreation system. Although the contrast would not be as stark in Germany, much of the northern plain and seashore could also be excluded from consideration under forest recreation.

Other environments, such as city forests and parks, local reservoir landscapes or some state parks, are often difficult to categorize into forest or non-forest areas. In many cases, trees comprise a substantial portion of the landscape, allowing it to be classified as forest. Yet, these recreation areas lose their natural appearance, taking on a cultured flair; they are not composed of a forest per se, but are an artificial "treed" environment for intensive recreational utilization.

Forest recreation, as applied in this report, is used in its broadest context for several reasons: It is not in the realm of this study to discriminate fine delimiting of forest recreation resources from national levels; no standardized criteria exists to segregate forest and non-forest environments for the two areas under consideration; no comprehensive comparable data are available relating specifically to forest environments; the natural forest conditions and intensity of use in the two countries are highly diverse; and the forest is often seen more as an integral element in

the overall landscape planning, rather than as an independent recreation resource.^{20, 21, 34, 38, 42}

Applying the term in the widest sense of its meaning, forest recreation would then be that recreation which takes place in or is directly related to a forest or forest-like environment. The definition would, in essence, include recreation of all forested areas, regardless of intensity of use, as long as the area has maintained a resemblance of a natural forest environment, and the activity is related to such an environment.

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Chapter 7

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CHAPTER 8

FOREST RECREATION: DEMAND

Demand for forest recreation is that amount of forest recreation opportunities that the public desires. Since forest recreation is an obvious segment of the total outdoor recreation scene, basic planning techniques for and many pursuits of outdoor recreation are generally valid for forest recreation. Some of the major socio-economic factors effecting demand for outdoor recreation have already been discussed for the two societies in chapter two. In this chapter, the intent is to take a look at the efforts pursued in the United States and Germany to determine and further analyse the characteristics of the demand for forest recreation.

8.1. The Outdoor Recreation Experience¹⁰

At first glance, a recreation experience would appear to consist only of that period of time in which the actual participation occurs. Upon closer scrutiny, however, there is far more to a complete recreation experience than the on-site activity. Fundamental to taking part in any outdoor recreation event is the physical, economic and emotional involvement of the entire experience composed of five distinct phases - anticipation of the event, travel to the site, on-site participation, travel from the site, and recollection. The relative importance of the individual elements may vary from case to case, but each phase is relevant in every outdoor recreation experience. When planning for forest recreation, agencies must keep the total experience in mind since the success or failure of the complete outdoor recreation experience

may depend directly or indirectly on one or more phases of the experience.

For example, travel required to reach the actual recreation site may consist of a few minutes needed to reach a city park, or entail extensive distances to reach outlying forest areas. This phase may play a role in the outcome of the quality of the total experience since inferior road conditions, crowded public transportation or traffic congestion may effect emotions and attitudes throughout the other phases of the experience and ultimately determine whether or not a similar excursion will be undertaken by the participant in the future.

8.2. Determining Demand

One of the basic steps of forest recreation demand analysis is the determination of the effective population, that is, the size and distribution of the population participating in forest recreation activities for any given area.¹² This would hold true for planning from a national level as well as on a more restricted scale such as state or local area levels. The basic tool used to get a handle on the public's demand for outdoor recreation is through the conduct of statistical surveys.

8.2.1. National Outdoor Recreation Surveys

In 1958 the need for an intensive nationwide study of present and future problems related to outdoor recreation in the United States was officially recognized

by appointing the Outdoor Recreation Resources Review Commission (ORRRC) to determine the outdoor recreation demands and resources of the country.³⁸ One of the many significant recommendations of the ORRRC was to establish a federal Bureau of Outdoor Recreation (BOR), a suggestion which was implemented within months after the final report of the ORRRC. The BOR is responsible for, among other functions, preparation and maintenance of a continuing inventory of the outdoor recreation needs and resources of the United States; preparation of a system for classification of outdoor recreation areas; formulation and maintenance of a nationwide outdoor recreation plan; and providing technical assistance and cooperating with the states and local governments.²⁶ Since its establishment, the BOR has conducted several nationwide outdoor recreation surveys, the most recent in 1970, and developed a master outdoor recreation plan for the entire nation. In addition to those accomplished by the ORRRC and BOR, over 15 other national surveys have been carried out in the United States by various groups, agencies and individuals.²⁸ No equivalent surveys, plans or organization are known to have been accomplished or established in Germany to date, except a survey to determine participation in outings and weekend recreation.²⁴

8.2.2. Intermediate and Local Level Surveys

A basic eligibility requirement for federal grants to states and local governments, through the Land and Water Conservation Fund Program of 1965, for planning, acquisition and development of public outdoor recreation areas and facilities is that a state must develop a comprehensive statewide outdoor recreation plan, and update and refine

the plan on a continuing basis. All 50 states have completed such plans and in so doing, have accomplished surveys at the respective state and local levels.²⁶ Various other state and local surveys, numbering over 150, have also been carried out in the United States.²⁸

In Germany no state level outdoor recreation surveys have been accomplished; however, numerous surveys have been carried out for various local and urban areas. Until 1962, no known surveys had been conducted in Germany to determine the demands and desires of the outdoor recreationist. Since then a row of surveys have been made, although not always according to statistical principles.⁴³ Most German surveys have been carried out on-site in the forest, which produces little information on that portion of the population that does not visit the forest, but does permit some conclusions to be drawn regarding the wants and needs of the forest recreationist.

8.2.3. Methods of Survey

In attempting to measure demand for outdoor recreation, the surveys discussed here have taken on two forms: The "representative" survey, carried out at the place of residence or "Quellgebiet" ("source area") and the on-site survey, accomplished at the place of participation or "Zielgebiet" ("objective area"). In the United States extensive surveys by both means have been pursued, especially in the recent decades. The surveys in Germany have been mainly conducted on site. Of those surveys directly related to forest recreation, only two surveys (one each in Bremen and Munich) are considered to be representative types and would be applicable mainly to the local areas in which they were conducted.

A recent survey by Hoffmann²⁴, although on a national scale, was restricted to whether or not the population participated in outings and weekend recreation, but provides no information relevant to actual desires, needs and demands for particular pursuits. The use of mail questionnaires and personal interviews were the more common techniques employed in both cultures.

8.2.4. Categorization of Outdoor Recreation

Delineating recreation on a time-space relationship is common in both societies, using such zonal designations as "Tageserholung" (daily recreation), "Wochenenderholung" (weekend recreation) and "Ferienenerholung" (vacation recreation). In Germany, daily and weekend recreation is frequently grouped under the common term of "Naherholung" (near-recreation) and vacation recreation is normally meant to mean an extended trip of 5 days or more.⁹

In the United States the BOR has compiled recreation information according to vacations, overnight trips and outings. A vacation is considered a trip away from home during the summer months, and lasted an average of around 10.5 days in 1965. Other trips taken overnight or longer, including second vacations, primarily to participate in any outdoor recreation activity are classified as overnight trips and had an average duration of 2.7 days in 1965. A recreation outing is defined as a trip occupying the better part of the day (4 hours or more), the average outing lasting 7.5 hours in 1965.⁵³

Looking at outdoor recreation from a zonal standpoint, in the United States 60 percent of the outdoor recreation

occurs as daily within a 65 kilometer radius from the place of residence, 30 percent from 65 to 200 kilometers away as weekend recreation, and 10 percent on extended trips.^{12, 13} In Germany, the tendency has been to limit "Naherholung" to a 50 kilometer radius.^{9, 36} In some cases daily recreation has been confined to limits of a five kilometer radius for cities from 10,000 to 50,000 population and ten kilometers for cities over 50,000 population.^{59, 61} Still, in Munich it was shown that of all the households involved in the survey, 20 percent traveled up to a 30 kilometer radius, 40 percent traveled 30 to 100 kilometers, 33 percent 100-250 kilometers and nearly 7 percent over 250 kilometers to reach recreation objectives.⁴⁷ Considering one or two hours as a reasonable travel time to participate in weekend outdoor recreation, 30 to 250 kilometers would not be an overestimation of weekend zones.³⁷ It would also be more consistent to data in the United States, where in 1965, 55 percent of the population, 12 years of age and older of the United States, went on outings with an average distance from home to destination of 50 kilometers; eighteen percent of the population made overnight trips amounting to an average distance from home of 180 kilometers and 40 percent of the population took vacations of an average distance of 900 kilometers.⁵³

In Germany it is estimated that of the total free time available to the average person, 70 percent is consumed at or near home, 20 percent is used for intermediate excursions on weekends and 10 percent is allotted to extended trips and vacations of five days or more.^{9, 17, 46} Still, this gives no indication as to how the time is used. In Munich, it was found that 30 percent of the population participated regularly in some form of "Nah-

erholung", the figures correlating quite well with other large German cities.^{11, 47} Hoffmann²⁴ determined that 33 percent of the German population 14 years and older make an average of 2.15 daily or weekend outings in any given four week period and Bichlmaier⁶ found that in Munich 75 percent of the outings take place on weekends or holidays.

This strong emphasis on trying to gain an insight to daily, weekend and vacation recreation in Germany stems from several factors. No one urbanized area can be isolated from another as an effective population for weekend recreation because each large urban area is within 250 kilometers of at least two other densely populated areas. The average distance of vacation traffic is 450 kilometers, so tourist and vacation areas overlap, as well as weekend and day recreation areas because many spas and health resorts are in identical areas as those attracting the tourist and vacationer.³⁵ This overlap of the different recreation categories is seen in the Black Forest, where during the summer of 1972, around 70 percent of the recreationists were vacationers while 30 percent were in a daily category, the problem being that all are concentrating on well known areas and affecting the overall quality of recreation for both sectors.^{3, 7}

8.3. Participation in Outdoor Recreation

While extensive data for participation in outdoor recreation activities exists for the United States, little information, as to what outdoor activities the German population actually pursues, is available. Various surveys have been conducted, but since no delimiting

of recreation according to indoor or outdoor has evolved in Germany, outdoor activities are usually found grouped under the overall heading of "free time" activities. For example, a survey in Hamburg showed that outings ranked fourth as an activity after watching television, visiting relatives and pursuing hobbies.³³ In the industrial city of Marl, a survey in 1955 showed 9 percent of the people taking part in walking or driving for pleasure; this figure increased to 42 percent in 1971.¹⁸

In another survey in 1969, scattered among other free time activities, 56 percent of those surveyed participated in walking or hiking; 27 percent in gardening; 25 percent in outings; 15 percent swimming; and 13 percent in active sports.⁴¹ Other surveys have been conducted, but data is rather general in nature. For instance, in Hannover, it was estimated that 25 percent of the families visit a park daily or weekly and 30 percent never participate.¹⁹ And there is no question that overall participation in outdoor recreation is great considering that: in Hamburg 62 percent of the population seeks recreation in rural areas;³⁶ the number of overnight stays at ~~campgrounds~~ doubled in Schleswig-Holstein in the period from 1961 to 1966;³⁶ recreation participation tripled in Baden-Württemberg in the last 20 years;⁸ and returning weekend recreation traffic in the Harz Mountain area is 6 times that of peak tourist traffic in the Alps.³⁵

One sector of outdoor recreation that is increasing rapidly, as tenting decreases, in Germany is the mechanized camping market, the major vehicle being the "caravan", or travel trailer.⁴ Twenty years ago only 1053 caravans

were registered in Germany; in 1974 there were 250,000 and the market is expected to expand 15 percent yearly.⁴² In the United States it is estimated that there are some 4 million camping units (trailers, motorhomes, etc.) and also growing rapidly in number annually.^{54, 55, 56}

Further indication of the degree of demand for some activities is manifested in the necessity to reserve grill areas for group use around cities, and the intensive use of forest playgrounds.^{15, 16, 48, 57}

Although no figures are available, it is common knowledge that horseback riding has experienced a tremendous increase in recent years, causing conflicts of resource use and requiring regulation in some areas.²⁰

In the United States, the BOR has continued to compile statistics on a national basis patterned after the intensive survey accomplished by the ORRRC in 1960. Consequently, with other surveys to supplement these data, a substantial amount of information is available at the national level to determine trends in outdoor recreation participation. Keeping in mind the variations which can occur through sampling errors and modification of survey procedures, the data presented in table 17 portray a relatively consistent picture of the outdoor activities pursued by the American population over the past decade. It should be understood that table 17 shows only the percent of the population that took part in one of the activities and does not show the intensity by which the particular activity was pursued.

By viewing participation as volume (intensity) of participation, measured as activity days (an aggregate of 12 hours, whether 12 hours by one individual or 1 hour by

TABLE 17
PERCENT OF POPULATION PARTICIPATING IN SELECTED OUTDOOR
ACTIVITIES IN THE UNITED STATES¹

Activity	Survey Year		
	1960 ²	1965 ²	1970 ³
Picnicking	53	57	49
Driving for pleasure ⁴	52	55	-
Sightseeing	42	49	-
Swimming	45	48	46
Playing outdoor games and sports	30	38	36
Attending outdoor sports and concerts	33	41	35
Walking for pleasure (30 min. or more)	33	48	30
Fishing	29	30	29
Boating (canoeing, sailing, other)	26	30	24
Bicycling	9	16	22
Camping	8	10	21
Nature walks	14	14	18
Hunting	13	12	12
Horseback riding	6	8	10
Bird watching ⁴	-	5	4
Wildlife and bird photography ⁴	-	2	3

Sources: 1970 data - U.S. Bureau of the Census. 1972. Statistical Abstract of the United States. Washington, D.C. (Table No. 323); 1960 and 1965 data - U.S. Dept. of Interior, Bureau of Outdoor Recreation. 1972. The 1965 Survey of Outdoor Recreation Activities. Washington, D.C. (Table 1, p.3).

¹ Variations in data for individual years may be from surveying methods, activity groupings or time span.

² Data for all persons 12 years and older

³ Data for all persons 9 years and older

⁴ Not included in 1960 survey; not available from the 1970 survey.

12 individuals), then in 1965, walking ranked first, with swimming and driving second and third respectively. From 1960 to 1965, the volume of participation in these three activities increased by 82, 44 and 8 percent, in that order. Picnicking, although showing the largest percentage of the population participating, was in number seven position in volume participation in 1965, with less than half the number of activity days as for walking for pleasure.⁵³

8.4. Preferred Outdoor Recreation Activities

In the United States, respondents to the 1965 survey showed a strong preference for active recreation activities. For the summer, 76 percent of the population had a favorite activity, 52 percent for the fall, 35 percent for the winter and 47 percent for the spring. Table 18 shows the favorite outdoor activities of the American public during the four seasons of the year. Swimming was the most favored summer activity while hunting was the favorite in the fall, ice skating in the winter and fishing in the spring.⁵³

Little information is available for Germany regarding outdoor recreation activity preference. Data is primarily from on-site surveys taken mostly in forested areas. Preliminary results of a survey of three forest recreation areas in the Black Forest revealed that of those recreationists who would use certain facilities if they were present, over 80 percent would desire ponds and lakes, more than 75 percent would visit animal parks, 65 percent plus would use nature trails and about one third, especially youth, would like picnic and grill areas.⁶⁰ Water as a focal point, with its associated

TABLE 18
FAVORITE OUTDOOR RECREATION ACTIVITIES IN THE UNITED
STATES

(Percent of those interviewed who had a favorite activity,
by season and activity - 1965)

<u>Activity</u> ¹	<u>Summer</u>	<u>Fall</u>	<u>Winter</u>	<u>Spring</u>
Swimming	32	1	-	3
Fishing	18	7	6	21
Picnics	6	2	-	3
Playing outdoor sports and games ²	16	16	7	25
Camping	4	2	-	2
Gardening	4	1	-	11
Hunting	1	23	16	-
Walking for pleasure	2	8	4	7
Driving for pleasure	2	4	1	4
Attending outdoor sports events ²	4	20	2	7
Ice skating	-	1	25	-
Sledding	-	-	15	-
Skiing	-	-	12	-
Other	11	15	12	17
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

Source: USDI, Bureau of Outdoor Recreation. 1972. The
1965 Survey of Outdoor Recreation Activities.
Washington, D.C. Adopted from Table 4, p.6.

¹ Only major activities are included; a dash indicates
percentage too small to record and may be included
under "other".

² Includes activities listed separately in source
document.

activities, is also a common theme throughout other literature.^{2, 5, 36, 40, 58} Swimming was also a major activity of recreationists in Hamburg.³²

8.5. Mode of Travel

As is to be expected, in the United States the automobile is the main means of transport to reach outdoor recreation sites. In 1965, for example, the use, by percent, of the various modes of transportation for the three categories of recreation were:⁵³

	vacation	overnite	outings
automobile	85	91	89
train	2	-	1
bus	4	2	2
airplane	4	-	-
combination/other	5	7	8

The increased role of the automobile in Germany as transportation for outdoor recreation can be seen in the results of several surveys. Around Munich it was determined 50 to 53 percent of the visitors to forested areas used an automobile.^{6, 34} But a more representative survey of the vicinity regarding Naherholung found that up to 73 percent from suburbs and 50 percent from urban centers used the passenger car as transportation.⁴⁷ Hoffman's²⁴ more extensive survey for Germany as a whole found 80 percent of the "Naherholung" was accomplished by automobile, 10 percent by bus and 6 percent by train, the mode of travel depending on age, occupation, income and, also, whether the participant was from a large

city or not. Similar results were found in Hamburg.³³ And Hanstein's²¹ study showed that 67 percent of the visitors to a nature park north of Frankfurt arrived by automobile while the number of those coming by foot sank below 10 percent, the remainder using public transportation. These findings would also correlate well to circumstances in the United States where 83 percent of the households in rural and suburban areas possessed an automobile, while only 53 percent of the households in central urban areas owned their own vehicle.⁵² Still the mode of transportation depends largely on the distance of the site from the resident. In German forests near urban areas, almost half of the visitors come by foot, the bicycle being a major means in level country.²⁷

8.6. Socioeconomic Characteristics of Outdoor Recreation Participants

In an attempt to contrast the American and German recreation participant, some of the major socioeconomic factors, for which comparable data are available, are taken under consideration.

8.6.1. Income

Statistics for outdoor recreationists in the United States have been compiled according to seven income graduations ranging from under \$3000 to \$25000 and over per year.⁵³ Hoffmann's²⁴ survey had a similar breakdown by monthly income ranging from 800 DM to 2000 DM and over. Those making outings and weekend drives being construed here to mean taking part in outdoor recreation,

were strongly represented in the middle income brackets, while the lower income (up to 800 DM) sector was small (8%). A quarter of all those surveyed fell in the 1500 to 2000 DM category and 18 percent had incomes of 2000 DM or more per month.

Income in the United States played a similar role. As a percent of all the participants of the selected outdoor recreation activities, generally around 10 percent were in the under \$3000 category. Around 80% of all participants had incomes ranging from 3000 to 15000 dollars while only around 10 percent had incomes of over 15000 dollars. Considering the variation in statistical compilation and the lower, middle and upper income brackets, participation according to income levels is somewhat similar in both cultures.

8.6.2. Place of Residence

Living inside or outside Standard Metropolitan Statistical Areas (SMSA) was used as delimiting the place of residence in the United States, an SMSA consisting of a county or group of counties containing at least one city of a population of 50,000 or more. For the various activities, except for hunting, place of residence of participants was 60 to 70 percent within SMSAs.⁵³

Hoffmann's²⁴ breakdown was according to six community sizes, ranging from less than 2000 to over 500,000. Fifty-three percent of those surveyed came from urban areas with 20,000 or more inhabitants, a rough approximation to that found in the United States.

8.6.3. Age

Combined age of the participants in the United States shows that for most activities the age group from 12 to 24 years participates most while those in the age bracket from 25 to 44 years made up about one-third of those participating. Participation varied greatly among ages according to the strenuousness of the activity, especially for the 45 and over category. For example, for such activities as skiing, horseback-riding and bicycling less than 7 percent of the age group 45 and over participated, whereas in less strenuous activities such as walking and picnics, participation among age groups was more equally distributed.⁵³

Not knowing the activities themselves, but whether they participated or not in outings and weekend recreation, Hoffmann²⁴ found that 37 percent of the participants were 14 to 29 years of age, 38 percent 30 to 49 years old and 25 percent 50 years or older. Again, rough grouping of the age classes shows similar circumstances in the two countries.

8.6.4. Sex

Hoffmann²⁴ found that generally more men than women participate in outings and weekend recreation, 36 versus 31 percent of those participating respectively. Depending on the activity, similar results were shown for the American public in 1965. Women participated more, of those activities listed in table 17, in bicycling, horseback riding, walking, bird watching, nature walks, picnics, driving and sightseeing, but the average percentage for all activities for men was 53 percent.⁵³

8.7. Motivation for Forest Recreation

Having looked at some of the activities in general outdoor recreation, it is interesting to note the overall motivations for participating in forest recreation even though the data are unreliable due to survey techniques.⁴³ In Munich, thirty percent valued the forest for its fresh air and 36 percent came to walk or hike. Preliminary results of the Black Forest Survey also indicated the main reason for visiting forest areas as quiet and fresh air.⁶⁰ Other surveys in Germany generally showed the same results: The representative survey in Bremen showed 38 percent of the urban population made forest outings to enjoy the clean, fresh air, another 24 percent sought quiet, and 19 percent favored walking and hiking;⁴⁵ Hanstein²¹ and Kettler²⁷ derived similar results. Yet, there was a large interest shown for observing nature in Stuttgart and Hannover-Münden.^{27, 44} Other reasons for visiting the forest fell into such categories as active sports, visiting forest inns, gathering mushrooms and berries, and so forth, but were relatively minor grounds.⁴³ This is only confirmed in the preliminary results of an on-site survey in the Black Forest where 49 percent of those interviewed came to walk, 24 percent to hike, three percent to picnic and 24 percent for other miscellaneous reasons.³ It was also concluded that the enjoyment of fresh air was cited as a greater factor for forest visitation for those from industrial cities than from less industrialized areas in Germany.²⁷

Limited information in this vein was available for the United States, other than the data already presented as preferred activities for outdoor recreation. But,

if one assumes wilderness as consisting primarily of a forest environment, and granted that participants in wilderness recreation are a minority, the basic reasons for the visitor participating in wilderness activities would be based on aesthetic and solitude grounds; that is, to observe the beauty of nature, and retreat from the sights, sounds, and smells and controls of civilization.^{23, 31, 39, 50, 51} Since participation in a wilderness experience entails walking, hiking and camping, these activities would be in close association to aesthetics and seclusion as motives for using the forest environment. Although no data is available regarding the motivations for visiting the non-wilderness forest as a walker and hiker, the same basic motivating factors are assumed to be valid for the non-wilderness forest user as for the wilderness enthusiast.³⁰

Although solitude is a primary factor for wilderness use, it should not construe participating alone, as the word implies. On the contrary, it was found that wilderness visitors do not travel alone, but usually participate as small groups comprised of close friends or family members.²³ This is also the case for forest recreation in Germany. Forest visitation solo is an exception, with participation normally occurring in a small group of 2 to 3 persons, consisting also of close friends or members of the family.^{1, 6, 21, 45}

While the wilderness user desires to get away from the adverse facets of industrialized society and enjoy nature in the raw, the other extreme of the camping market - the developed campsite user - apparently lays substantial value on socializing at the same time that he enjoys the attributes of the forest environment.^{22, 29} As in

Germany, where camping is also a rapidly growing sector of the recreation public, economic reasons play a pertinent role as a motive for camping in the United States, but nearness to nature and less restrictions than organized travel are values of camping to be considered as motives for pursuing this activity.³⁵

8.8. Preference of Forest Environments

Much effort has been directed at trying to determine in what type of landscape the recreationist likes to spend his time and what forest type he prefers. All but a few surveys have included, or consisted solely of attempts to answer these questions of environmental management. Rozsnyay⁴³ compiled the results of numerous forest surveys conducted over the past decade, revealing what the forest recreationist prefers for environment when visiting the forest.

In asking where they prefer to recreate in the vicinity of Munich and Münden, around half of those questioned named small clearings and forest meadows as the preferred environment. Another quarter of the respondents felt the closed forest was more desired and less than 20 percent found the edge effect of forest-field as desirable.^{6, 45} Not only is the inner forest itself preferred, but the structure and type of the inner forest openings had aesthetic appeal. For example, in Bremen and Münden forest recreation areas, approximately one-fourth of the respondents cited extensive, closed forest areas as desirable; around half preferred an extensive forest area, but interrupted by frequent meadows and smaller clearcuts; about 20 percent found an open

field-forest-meadow distribution appealing; and less than 9 percent preferred a non-forest landscape.^{44, 45} Similar preferences were revealed by intensive surveys in recreation areas of the Black Forest.⁶⁰

Whether conifer or hardwood forests are more suitable for recreation has been under discussion by "Forst-ästhetiker" (forest environmentalists) since the last century in Germany, with the sympathy generally running with hardwood stands.⁴³ However, the recent surveys tend to refute those views; they also provide some insight to wilderness attitudes of the German public. Only ten percent of the respondents preferred "Urwald" (wilderness), while half cared more for a forest managed with recreation and timber on equal priority, and 25 percent liked a "cultural" or an estate-like forest.^{25, 45}

In response to preferences for hardwood, mixed or conifer forests, in general 25 to 50 percent of those confronted had no preference. However, by recomputing the data for only those who had stated a preference, it was clearly revealed that the majority (around two-thirds) of the respondents took a liking to mixed hardwood and conifer forests, the least preferred (about 10 percent) being hardwood stands and a quarter desiring conifer forests.⁴³ These results are also in line with the preliminary data from the Black Forest survey, where it was also found that most like stands of older timber.⁶⁰

There are some indications, however, that individual preference for a particular forest type is dependent on such factors as occupation and size of urban area in which the person resides. It is also not clear just what the public understands under "mixed forest". For

example, it could mean alternating small pure stands of hardwoods and conifers or mixed forest in the silvicultural sense, but it is thought to mean the former to the public.^{4, 3}

Efforts to evaluate intangible values of the forest in the United States have been more concerned with trying to quantify landscape amenity values as a whole rather than by specific values, with research directed more toward quantitative measuring devices in contrast to qualitative means.^{14, 49} This is also apparently the trend in Germany as was noted in the previous chapter. That the forest recreationist tends to be stimulated by diverse factors of the environment or that he tends to view his total environment as a landscape entity was also a conclusion of Rozsnyay.⁴³ Although scattered information is obviously present regarding the preferences of various environments in the United States, no information regarding public preferences for specific forest types was available for comparable evaluation in this study.

8.9 Attitudes of the Forest Recreationist

Information concerning the attitudes of the forest visitor toward management activities in the forest and use of the resource by other sectors of society is rather limited. Still, some indication of forest user values in the two cultures can be gained, although it must be kept in mind that the data is based on a very limited segment of both the user and population.

Attitudes toward forest roads and trails. Generally, the forest visitor in Germany likes his trails small,

curving and on an easy grade, especially in urban forests, with only a third desiring hard surface.²⁷ It was obvious in all cases that the forest roads in Germany should remain closed to all motorized traffic, the consensus on this point running at 90 percent.^{43, 60} In urban forests, half of the visitors were indifferent toward marking trails, while in other areas marked roads and trails were preferred.^{27, 43}

In the wilderness areas of the United States, the user preferred developed and maintained trails, in contrast to only marked or blazed routes, consistent with volume of use. The necessity of signs in wilderness areas was taken for granted, but the type of sign should be rustic in appearance and for directional purposes only.²³

Attitudes toward facilities and improvements.

Only about half of users in Germany cared whether facilities were provided in the forest or not.⁴³ Facilities that were desired most were benches, shelters, sanitary facilities, restaurants, and picnic and grill areas.^{27, 60}

In wilderness areas, although facility development must be consistent with wilderness values, half the respondents felt toilet facilities should be provided. Fire-place and grill areas should be limited and of simple, rustic design, used only where necessary to protect the site. Users also felt that shelters and picnic tables should be provided, but compatible with the wilderness environment and on a minimum scale.²³

Attitudes toward resource management.

Being asked whether they observed that their forests are

being managed, at least three-fourths of the German respondents replied positively. However, when asked whether they found it distracting or not, less than ten percent had any adverse feelings of management activities.^{27, 43, 60} In wilderness areas, management for timber is prohibited and therefore, no comparative data for the United States was available, but it can be surmised that the American attitude would be substantially divergent from that found in Germany.

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CHAPTER 9

FOREST RECREATION: RESOURCES

There is no question that demand for forest recreation, even though comprehensive comparative data is lacking in some areas, is obviously high and increasing in both Germany and the United States. The purpose of this chapter, then, is to view the supply of forest recreation resources to meet these demands, forest recreation resources taken to mean here not only natural features of the landscape, but also including developed facilities designed for more intensive use of an area, and the safety, health and comfort of the forest visitor.

9.1. Classification of Outdoor Recreation Resources

Outdoor recreation resources in the United States have been delimited in various ways. The ORRRC²¹ suggested a six-category classification system, which the Bureau of Outdoor Recreation (BOR) adopted and modified, based on environmental characteristics and management criteria, while Clawson and Knetsch⁹ developed a system of three types of areas - user oriented, intermediate and resource based - derived more on economic similarities. Despite methods and nomenclature, most classification systems have much in common as seen when comparing the ORRRC and Clawson schemes:^{9, 21}

Class I - High density areas intensively managed and developed for mass use (user oriented).

Class II - General outdoor recreation areas subjected to substantial development for a wide variety of specific uses (intermediate).

- Class III - Natural environment areas suitable for recreation in a natural environment in combination with other uses (intermediate).
- Class IV - Unique natural areas of outstanding scenic beauty or of scientific importance (resource-based).
- Class V - Primitive, undisturbed, roadless areas characterized by wild, natural and wilderness conditions (resource-based).
- Class VI - Historic and cultural sites of major significance (resource-based).

Still, on a nationwide scale the ORRRC system of classification had some shortcomings, and a new system of outdoor recreation land classification was developed by the BOR that allowed more flexibility for the numerous federal, state and local recreation agencies to further zone categories within the broad, standardized system of classification. Under the newer system, five types of recreation lands are classified, the sixth category considered as non-recreational lands. Classes four and five both comprise undeveloped lands with motorized access permitted in the former, but not in the latter. The first three categories amount to high, intermediate and low density use and development.³² While the system may have its applications under American conditions, it does not lend itself well for an international study as this; consequently, a broad classification similar to that of user oriented, intermediate and resource based is deemed more suitable since 99 percent of the land is considered as developed and all lands have experienced human impacts in the past in Germany.

The system of outdoor recreation land classification in Germany correlates directly to the type of recreation -

"Tageserholungsgebiet" (daily recreation area), "Wochenenderholungsgebiet" (weekend recreation area) and "Ferienerholungsgebiet" (vacation recreation area),³⁵ and would conform well with the descriptive categories of those areas seen as user oriented, intermediate and resource oriented of the American system. For the sake of versatility and standardization the terms daily, weekend and vacation recreation areas will be applied in this study.

Daily recreation areas would then be characterized primarily by their access to the user. They are designed and constructed to accomodate specific recreation activities, are relatively small in size and utilization corresponds closely with leisure time available on a daily basis, consisting of short breaks to a few hours. In the United States this category would include city parks and playgrounds, while in Germany it would also encompass many forest areas adjacent to urbanized environments, some with zones of intensive use resembling parks and including a natural forest appearance with nothing more than roads and trails providing access.

On the other extreme, vacation recreation areas are usually remote from population concentrations, requiring considerable travel, time and money to use. Because of their relative sizes, this classification would be more applicable to the United States, as far as remoteness is concerned. Viewed from the type of recreation use, however, the more extensive forested areas of Germany - Bayrischer Wald, Schwarzwald, Pfälzerwald, Harz and Taunus Mountains, and Bavarian Alp Region - provide vacation type forest-based recreation resources.

Weekend recreation areas would be those lying between the two extremes, their use occurring when leisure time is available in blocks of a few hours to a few days, permitting travel to areas more removed from daily areas. While in the United States this category would include many state parks and forests, some municipal parks and many federal reservoir recreation sites, in Germany it would also involve many of the areas included under vacation areas.

Although a great many areas and most types of use fall into the general patterns described above, and the system of classification can be usefully applied to both Germany and the United States, there is in actuality a continuum from one extreme to the other by any measure or characteristic that may be used. In the United States, for instance, the size of some municipal parks will be larger than many state parks, while the latter may be larger in area than some national parks.⁹

In terms of location and characteristics, few people would be located so near to national parks and forests so as to utilize them as most people would use a city park. On the other hand, a few people may be willing to spend their entire vacation going quietly to local parks and forests each day. In Germany, for example, in cases where municipal parks are lacking, portions of a nearby forest may serve as intensive use areas, much as a city park - Stadtwald Frankfurt, for example, yet provide quiet zones for walking.²⁰ Overlap of the different recreation area categories is frequent and probably more the case in Germany than in the United States because of population density and area accessibility. Typical is the situation in Baden-Württemberg where weekend

recreationists are overcrowding many well-known spa and health resort areas.¹⁶ Nevertheless, forest recreation areas of various sizes, geographical location and physical characteristics form an interrelated recreation system in both countries.

9.2. Natural Forest Recreation Resources

A brief description of the proportional aspects of the various special purpose forests has already been presented in chapter six, showing that vast areas of the landscape have been designated as having particular value for recreation in both cultures. Here a closer look is taken at the natural forest recreation resources in light of the numerous nomenclature and their comparative characteristics as they relate to forest recreation.

9.2.1. Research Natural Areas and "Naturschutzgebiete"

"Bannwälder" (forest preserves) are essentially "Naturschutzgebiete" (nature preserves), the terminology used inferring only a specific ecosystem. Both have as their primary purpose of serving as scientific and educational interests, basically the same as Research Natural Areas in the United States, these areas also encompassing a variety of ecosystems. Though of recreational value, utilization of Research Natural Areas and "Naturschutzgebiete" for pure recreation is generally discouraged in both countries to avoid human influences on the environment. In this respect, these areas have limited forest recreation capability, although learning about nature has become a popular recreation activity and the recreational value of Research Natural Areas and Natur-

schutzgebiete should not be underestimated.¹⁴

9.2.2. National Parks and Wilderness Areas

Since Germany has but one "National Park", it not presently meeting the prerequisites of a national park per se,¹⁹ and no wilderness remains in the sense of the American concept, this category of forest recreation resources is unique to the American forestry ideology. This should come as no surprise, since human footprints marked the present area of the "Nationalpark Bayrischer Wald" as early as the time of Christ - 1500 years before Columbus arrived in the New World.¹³

Still, the forest history of the area is known to such an extent that rehabilitation efforts are directed at restoring the original forest type composition by silvicultural treatments and management techniques so that eventually the area should attain the natural quality of a national park as presently defined by the World Congress of National Parks.²⁷ An area that is a closer approximation to a defined national park is the "Nationalpark Königssee" situated in the Bavarian Alps of the extreme southeastern corner of Germany. Encompassing steep mountainous terrain and one of the most picturesque natural lakes in the region, most of the area has been designated as a Naturschutzgebiet within the Naturpark Königssee, giving it a legal and development status more comparable to a national park.²⁸

In the United States, portions of the national parks have also seen extensive development and environmental modification to accomodate constantly rising visitation. For example, in Yellowstone National Park, 5 percent of

the area is taken up by development, the overall impact of this development probably affecting a much larger area.¹⁰ The often cited, built-in dichotomy of the national parks - preserve on the one hand, but provide recreation on the other - when Congress first set aside these areas, created controversy over national park utilization as modern transportation made these formerly remote areas more accessible. The need was seen to supplement the National Park Service Act of 1916 in protecting natural quality where natural conditions were still dominant in the remote areas of national parks and other natural areas, leading to the National Wilderness Preservation System in 1964 and assuring that substantial portion of the remaining undeveloped areas of the nation would be maintained in a natural state.

The Wilderness Act provides for preservation of natural conditions and for primitive forms of recreation, but only to the extent that recreation does not impair the wilderness resources. In essence, then, wilderness areas are not primarily recreation areas, the rapid expansion in wilderness type recreation requiring restrictions and control to prevent their overuse. In contrast to National Parks, wherein wilderness areas may also be located and development has occurred within their boundaries, in wilderness areas the land must remain undeveloped, without human habitation or permanent improvements and travel must be accomplished by non-mechanized means; while hunting is prohibited in national parks as a whole it is allowed in wilderness areas outside national parks, for instance in the wilderness areas of the National Forest System.^{30, 31} Regardless of the relatively minor differences between wilderness and a greater portion of the national park areas, most of

these areas are located in the western United States, rather remote from population centers, and can usually be seen as vacation-type recreation areas.

9.2.3. National Forests and "Naturparke"

The National Forests of the United States and the "Naturparke" (nature parks) of Germany have very much in common, at least in light of their overall use for forest recreation. Forests in these areas are managed under multiple-use concepts, except where wilderness areas or Naturschutzgebiete are located within their boundaries. Further similarities are noted in the emphasis on recreation in national forests and Naturparke, and their areas including substantial amounts of non-forest lands; about half of the area of the National Forest System consists of grassland, unproductive forests and other non-commercial lands, while Naturparke are about two-thirds forested, the other third being composed of various agricultural and other land uses. In national forests and nature parks, little restriction on management is prescribed except in consideration of aesthetic quality and compliance with multiple-use principles.

A primary difference between national forests of the United States and Naturparke of Germany is the ownership pattern and resource location. National forests are all in federal ownership under the administration of the Forest Service. Naturparke, on the other hand, show the scarcity of space in Germany by being composed of state, legal corporate and private lands, the selection of an area for a nature park depending on its suitability as

a recreation area because of the character of the landscape, economic structure and location in relation to densely populated areas.⁷ Since most national forests were delimited from the remainder of the public domain around the turn of the century, they are located mainly in the west and remote from densely populated areas. Like the national parks, most of the national forests would also fall under vacation-type recreation areas. In contrast, Germany's nature parks serve not only as vacation recreation areas, but also as weekend and even daily recreation areas.

9.2.4. State and Local Parks and Forests

State forest recreational lands comprise only four percent of the total forest land in the United States, but they include areas falling in all six recreation area classifications of the Bureau of Outdoor Recreation as well as the system adopted here, although over 85 percent is classified as natural environment, intermediate or weekend type. Together, state recreational areas number about 30,000 aggregating some 20 million hectares. Included in these figures are relatively small areas adjacent to highways which account for the greater number of areas, but fish and wildlife, and forest areas comprise the largest amount of total area. Annual attendance at all state recreational lands exceeds 400 million.⁶

All states have some form of state park system, administered under various organizational designations and often within a major department concerned with management of several other natural resources. The status of state recreational lands has improved in recent years, especially since federal financial assistance was made available through

the Land and Water Conservation Fund Act of 1965. The importance of state parks is obvious when one notes that the number and area of state parks doubled since 1941 and use increased fourfold.⁶

Although no separate category exists in Germany for state parks and forests, portions of state forest lands would take on the character of American state parks because of their degree of accessibility and development, with no sharp differentiation in use and degree of development from adjacent community or corporate forests. Except where state forest lands are found in more remote areas, the character and quality of state forests as recreation areas in Germany are equivalent to those of local agencies.

Local recreational lands include different types of public lands administered by municipal and county agencies. In one way or another, outdoor recreation at the community level affects more people to a greater extent than the opportunities provided by any other land type, mainly because they are where the people are and readily available for short time use as daily recreation. As related to forest recreation, these lands would include the city parks, local green belts and county forest and park areas, comprising the two percent forest area in the United States.

In Germany the local corporate or community forests - 25 percent of the total forest area - are far more extensive. Since some municipal forests cover quite large areas, often extending relatively far from the community itself, both weekend and daily recreation may be the rule. This blending of state and urban forests makes it difficult to classify German forests according to ownership patterns,

the usual classification applied being "stadtnaher Wald" (forest near urban areas).

9.2.5. Private Forest Lands

Comprising almost three-fourths of the total commercial forest land in the United States and 44 percent in Germany, private - industrial and non-industrial - forest lands play a vital role in providing forest recreation resources in both countries. Yet, this segment of forest recreation is the most difficult to quantify while very little reliable data has been accumulated as compared to that available for public lands. Except in some cases where public lands are kept in a wilderness or natural state, it is generally difficult to discern private and public lands, particularly in Germany.

Of all the commercial forest land in the United States, 92 percent is accessible to the public.¹¹ Usually, the private landowner has a rather passive attitude about trespass, allowing access so long as no damage is incurred, because enforcement of trespass restrictions are difficult. Furthermore, the larger forest industry companies can improve their public relations by not only opening their lands but also providing recreation facilities for the public, a trend that has expanded in recent decades.^{6, 11} These lands have long been open to public hunting and fishing, but the number of companies and the aggregate area has increased on which basic and intensive facilities have also been made available for public use.⁶

The value of the private forest in Germany was already noted, the trend being to legally assure public access

to private lands, with society bearing the costs for any damage inflicted upon the property by the landowner opening his lands for public benefit. In the United States, the private forest lands are also generally located where the population concentrations are found, making private lands an essential consideration in forest recreation planning.

9.3. Developed Forest Recreation Resources

Any improvements to the natural forest resource in the form of road and trail construction; installation of certain facilities to protect the health of the visitor, further particular activities, or prevent misuse and abuse of the environment; and modification of the natural surroundings directed at improving the physical appearance of the site can all be grouped as developed resources. In essence, for the utilization of the forest resource, some degree of environmental modification is required whether it be in the simple form of a foot path or a sophisticated campground. Although individual circumstances dictate what would be considered essential and non-essential development, facilities can generally be classified into two categories - basic and special.

9.3.1. Basic Developments

Developments needed to improve access to, and vehicular control in, the forest resource - roads, trails, parking areas and signs; those improvements deemed necessary to protect the health of the visitor - shelters, sanitation facilities and drinking water; and measures taken to prevent misuse and abuse of the environment are con-

sidered as basic developments here. The latter would include such facilities as fire place and grill areas for fire prevention in conjunction with picnic and camp sites.

9.3.1.1. Parking areas

Providing space for the forest visitor to park his automobile is a basic concern in both cultures. Still, this development differs considerably between the two countries in that in Germany the primary concern is one of providing space for the single vehicle of the daily and weekend recreationist, whereas in the United States much emphasis must be necessarily given to providing space for a variety of recreation vehicles in more remote campgrounds of vacation recreation areas, in addition to the concerns for parking of the daily and weekend recreationists' automobiles. Primary consideration of forest parking areas in Germany centers around the fact that practically all forest roads are closed to motorized traffic, requiring parking facilities for the hiker and walker who leaves his car near trunk roads at points where forest roads and trails converge. Forest parking lots vary greatly in size and type, not only between the two cultures, but also within local areas and it is not within the scope of this report to present descriptions thereof. In any case, they are designed to both protect the environment as well as to provide for space and a smooth flow of traffic.

9.3.1.2. Roads, trails and signs

Road and trail construction is quite variable in the United States, depending on the type of forest area.

For example, in wilderness areas only low density foot paths or animal trails are permitted as access routes to preserve the natural environment and maintain a degree of solitude for the visitor. Signs in wilderness areas are also limited to only those necessary to provide basic directions. In national parks and forests, access roads and trails may vary from asphalted trunk routes to minimum developed walking trails, with signs depicting not only directions but also historical and geological information of the area. Boardwalks are necessary in some cases to protect the natural surroundings; in national parks road and trail density is kept to a minimum, whereas in national forests road systems are restricted only by environmental considerations. Except for industrial forest lands, roads on private holdings are remnants of past logging with little maintenance and no marking.

Efforts in Germany are directed toward further intensification of the forest road and trail network throughout the country. Although constructed mainly in conjunction with timber management, the well-maintained roads provide the backbone of the German forest recreation system. In the 60's road density of those capable of handling logging trucks, averaged around 26 running meters per hectare for state and corporate forests.⁸ This figure obviously does not include skidding trails and other paths. Moreover, road density varies greatly among the different states, with a low of 12 meters per hectare in Niedersachsen to 40 meters per hectare in Baden-Württemberg, Hessen and Saarland in 1962.⁸

Similar statistics for the United States are lacking, but an insight of road density can be gained if one considers the 317,000 kilometers of roads in the National Forest

System and the 35 million hectares of commercial forest lands, resulting in a road density of 9 meters per hectare. This figure does not include the 160,000 kilometers of maintained trails found in national forests.²⁹ Road densities would obviously vary greatly among the various types of recreation areas, from practically none in designated wilderness areas to densities more comparable to those in Germany found in private industrial forests and local areas of public lands.

Developed trail systems tied in with other road systems are abundant in both countries. Major systems in the United States are the Appalachian Trail (3600 km) which winds through 14 states, 8 National Forests, 2 National Parks and numerous state parks from Maine to Georgia, making it the longest continuously marked trail in the world and within a day's drive of 125 million people²⁵ (figure 15); in the West the Pacific Crest Trail (2000 km) stretches from Canada to Mexico through the Cascade and Sierra Nevada Ranges.

Although not as long as these major trails in the United States, the systems of Germany, with their numerous cross trails, make an aggregate length of substantial proportions. For instance, in the Black Forest, three trails run its length - Westweg (350 km), Mittelweg (260 km), Ostweg (310 km) - and combined with the cross trails, attains a well-marked system of trails of some 21,000 km, maintained mainly by the "Schwarzwaldverein" (Black Forest Club).¹⁵ Clubs in other parts of Germany have likewise established extensive trail systems.^{14, 18}

As noted earlier, even though most of the forest roads in Germany are capable of supporting motorized traffic,

they are closed to the public as such, with only authorized forest personnel allowed access. This is in stark contrast to the American system where the roads are usually open to free access, restrictions found mainly in the legally prohibited areas of wilderness and national parks, and on some private lands. Trails for bicycle and horseback riding and cross-country skiing would take on similar characteristics in both countries.

9.3.1.3. Protective and Sanitation Facilities

Closely associated with road, trail and parking developments are the basic facilities needed to protect the health of the forest visitor - a source of drinking water, refuse disposal and toilet facilities, and shelters. The relative importance of these developments varies from one area to another as well as between the German and American culture in general.

Sources of drinking water are particularly important in remote campgrounds of the National Parks and Forests, and wilderness areas of the United States. In more accessible recreation areas of both Germany and the United States, drinking water is often a necessity but also serves as an attraction to some sites.

Refuse disposal systems are fundamental to both recreation systems as well as the associated problems of littering and disposal, but the provision of toilet facilities is unique to the American system. It is a rare case, except in the wilderness where they are seldom, if at all, authorized, when toilets of one sort or the other are not included in the development scheme of even rudimentary recreation sites. The opposite is true for Germany where

an outdoor toilet is an exception. Outside the developed campground and forest "Gasthäuser" (inns) little consideration is given to this segment of facilities in Germany. This is in part the result of the numerous forest inns located throughout the forests of Germany as well as lack of maintenance personnel. Still, according to one survey, it is a facility that well over half of the forest visitors would appreciate.⁴

Shelters are extensive in both countries. While no shelters are permitted in wilderness areas, some 240 are located along the Appalachian Trail;²⁵ shelters are also a prominent element of the other public recreation lands in the United States, ranging from simple covers to large, enclosed picnic areas. Shelters in Germany belong to the most basic of facilities as do resting benches.³⁶ Ranging from protective roofs to enclosed buildings, shelters numbered over 3700 in Baden-Württemberg alone in 1973.³ Perhaps more for comfort and convenience, but not oriented toward any special activity, resting seats or benches are as common to the German forest as a picnic table to the American scene, their number in Baden-Württemberg alone in excess of 24,000.²

9.3.1.4. Environmental Protection Measures

In essence, most of the aforementioned developed facilities are designed to a large degree for protecting the environment as well as providing access to the resource and protecting the welfare of the forest visitor. Yet, such facilities as fireplaces and grills, although also a convenience feature, help to prevent fires. By installing grill areas and fire rings in safe locations and simply providing the opportunity to build fires reduces the

hazards of uncontrolled firemaking. Consequently, a fire place or grate is an integral part of most picnic sites in the United States. In Germany, this facility is being extended rapidly, but is generally thought of as a special development.³⁶

Other measures taken to protect the environment in recreation areas are approached basically the same in both systems. These would include proper location of parking areas, roads or trails, facility design to prevent overuse, landscape planning and design to control visitor use by unique application of shrub planting, etc., and instigating rules and regulations.

9.3.2. Special Developments

While basic developments are seen more in the light of minimum or regular features to provide for access, safety and well-being of the forest visitor, and to protect the resource, special facilities are viewed more as developments for the comfort and convenience of the recreationist and are characterized by their orientation toward specific activities or attractions. As such, this category would include an array of special developments which would be beyond the scope of this study to discuss in detail; therefore, description of but a few of the more popular facilities is presented on a brief comparative basis.

9.3.2.1. Campground and Picnic Sites

Of the more than one million developed campsites in the United States, over one-third are administered by various public agencies, with over 100,000 sites found in

National Parks and Forests alone.³³ The number of individual sites is not known, but there are some 1800 campgrounds in Germany.²² Though popular in both countries, characteristics of campground facilities are somewhat different in the two cultures.

While public forest management agencies are quite involved in campground developments in the United States, as witnessed by the figures above, facilities development of this nature are left to local communities and private enterprises in Germany. This is largely the result of the remoteness and lack of private facilities of some of the forest recreation areas in the United States. As a result, with over 6000 campgrounds and numerous other developments, the National Forest System alone involves more outdoor recreation land and developed sites, offers a greater variety of recreation opportunities and probably involves a larger volume of use than any other single agency of government.³⁰

Campgrounds and picnic sites of the National Forests take on various levels of development, from those which have minimum primitive facilities to protect the resource to those highly developed to accomodate any recreation vehicle and requiring extensive modification of the environment to enhance recreation opportunities for all experience levels of the recreationists. It is at these more capital-intensive campgrounds that user-fees are charged, the site development including features as sewage disposal, water and electrical hookups and laundry facilities in addition to the normal facilities found at less developed sites. Picnic sites in the United States may also run the gamut from isolated tables to highly developed sites. Various degrees of facilities

development are also the rule for other public sites administered by the National Park Service, Bureau of Reclamation, Corps of Engineers and state agencies.

Various degrees of campground development is also the case in Germany, but the location of the site is usually in an open area adjacent to the forest rather than in the forest itself, as is often the case in the United States. This is also true for picnic fire places, their recommended distance from the forest being 20 meters.³⁶ Also, the tendency in Germany is to construct the fire-place or grill for larger groups or communal-type cooking;³⁶ this would be the exception rather than the rule in the United States where a picnic site normally consists of table and an accompanying grill or fire place.³⁰

Camping by tent has decreased in both countries, while use of the caravan or wheeled camper has increased. There has also been a trend toward group camping in the United States. As a result, campgrounds are planned in the National Forest System for 20 percent of the sites as tents, 60 percent as wheeled camper sites and 20 percent as two-family sites.³⁰

A trend around many of the major cities in Germany is the provision of year-round camp sites where trailers can be parked on a semi-permanent basis and used as a weekend house or a free-time domicile.²² Although the forest agencies in Germany are not deeply involved in commercial campground development, facilities for youth tenting have gained more and more importance in recent times, especially since some states prohibit tenting or building of fires in the forest. From the relatively few tenting areas of Baden-Württemberg in 1965,² the

number and area in 1973 increased to 175, covering an aggregate area of nearly 100 hectares,³ some areas becoming intensively developed which include sanitary and picnic facilities.¹ Usually, however, youth tenting areas consist merely of designated open meadows near forest environments with little facility development, giving the youth an opportunity to pursue tent camping.

9.3.2.2. Forest Playgrounds and Animal Parks

Children's playgrounds would generally have the same basic facilities in both cultures, with opportunities to climb and swing. What is unique in Germany, however, is the construction of the installations. Practically all facilities are manufactured through the skill of forest workers in the use of chain saws to produce images of various animals and items out of logs upon which the children can climb and play. It is rare to find commercially manufactured facilities, the variations in forest playground components limited only by the originality and application of ideas in using wood as a construction material.^{5, 23, 34} Short courses for forest workers have been developed to promote this trend.²⁴

Animal parks are also unique to the German recreation system, while wild game is usually abundant enough to be seen natural in the United States. Varying in size and number of from one to numerous indigenous large game species, animal parks are located in natural surroundings and large in area to avoid a zoo atmosphere, as is apparent in the 1240 hectare area of the 124 animal parks of Baden-Württemberg.³ Some are private enterprises while most are under the administration of state and local public agencies, the parks being located

near urban areas as well as in more remote forest recreation areas, but all developed under strict supervision of local authorities.

9.3.2.3. Winter Sports

Characteristics of winter sports facilities such as ski and sledding slopes leave little room for deviation between the two cultures.

9.3.2.4. Nature Trails and Forest Sport Paths

The nature trail idea, as picnicking, was borrowed from the United States and introduced in Europe, where the concepts have quickly spread.²⁶ Although somewhat altered in application, the basic concepts are reflective, with 288 forest nature trails of a combined length of 900 kilometers established in Baden-Württemberg.³

Developed by a Swiss life insurance firm, the "Waldsportpfad" (forest sport path) concept has expanded rapidly across Germany. Consisting of as many as nine stations at which up to 60 individual exercises can be performed, the sport path extends over approximately two kilometers of trails and is adapted to all ages and conditions of health of the forest user. Facilities are constructed of natural materials - stone, wood and earth. Over 100 sport paths have already been established in Germany.¹²

9.3.2.5. Information Centers and "Waldgasthäuser"

National Parks and Forests of the United States are characterized by their visitor service conducted through information centers. These centers take on several forms, a visitor information center in most national parks being the rule; many national forests, having recreation as the strongpoint, also have visitor centers, while Forest Supervisor and District Ranger Offices act as information service centers in all national forests. All these information dissemination facilities contribute to the visitor's enjoyment and understanding of the outdoors by providing various services as guided tours, maps, self-guiding auto tours, walking trails, campfire programs, roadside overlooks, exhibits and free literature.³¹

The latter feature is seldom the case in Germany as is the visitor center per se, the exception being the developments of the Nationalpark Bayrischer Wald which is patterned after the national park concept. Still, though literature is not generally free of charge and developments are not specifically designed around the visitor center concept, local forest offices and forest guest houses or inns often have information available regarding the local environment, or stand ready to help the visitor, the extensive system of forest inns providing the focal point where the visitors then disperse over the dense network of roads and trails radiating from the privately-run inn, a similar effect as that of the visitor center in the national parks or forests. However, the "Gasthaus" has as its primary function the provision of food, drink and overnight facilities for all types of recreation.

9.3.2.6. Pools, Ponds, Lakes and Streams

Development of water resources in forest environments is actively pursued in both cultures to promote wading, boating, swimming and ice skating. Reclaiming gravel pits and dam construction to develop ponds and lakes are techniques allowing little cultural differentiation, while in Germany, wading pools for young and old alike are developed with every opportunity, often by confining the runoff drinking water in small pools. Most of the major streams and even many small brooks in Germany have experienced strong artificial manipulation for flood and erosion control, their natural characteristics being lost. Still, every effort is made to replant watercourses to give a more natural appearance.³⁶

Although immense power projects have altered some of the major waterways of the United States, simultaneously providing large water recreation resources, the smaller streams have in general been left to run their natural course, some protected from any development under the Wild and Scenic Rivers Act of 1968.

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CHAPTER 10

FOREST RECREATION IN THE FORESTRY IDEOLOGIES:
SYNTHESIS AND ANALYSIS

In analysing the two forest recreation systems of the United States and Germany, the ideological forestry model provides a framework wherein the major elements of the systems can be compared, much the same as for the total forestry systems in the two countries.

10.1. The Societies and their Forest Environment.

Causal socioeconomic demand factors for forest recreation were noted as quite similar for both cultures. More leisure and income appear to have had the same effects of increasing demand for forest recreation. The German society as a whole is older with a larger proportion of women in the age 45 and over segment of the population, but in general the groups have reached very reflective overall quantifiable, natural characteristics - even to the point of low or negative birth-death ratios.

While public transportation is far more important overall in Germany and there are proportionally fewer automobiles than in the United States, the automobile apparently plays a much greater role as a mode of travel for recreation in Germany than would be anticipated from these data.

Geographical shifts in population are occurring in both cultures. In Germany the trend is from North to Southwest, while in the United States the trend continues westward. High density population concentrations and urbanization are common in both countries, the heaviest concentrations being found in the middle region of Germany and mainly in the Northeast of the United States.

Germany is almost ten times more densely populated, but the overall distribution of the population is more homogeneous than in the United States, where density may run from one to over 370 persons per square kilometer on a statewide scale. Not taking the city-states of Germany into consideration, population density on a state basis varies only from 149 in Bayern and Niedersachsen to 497 persons per square kilometer in Nordrhein-Westfalen.

Coincidentally, while the population density of Germany is ten times that of the United States, the total amount of forest per capita in the United States is ten times that of Germany - 1.23 versus 0.12 hectares per person respectively. In addition to more resource per capita, there is far more differentiation in its distribution in the United States. In Germany, less than 0,6 hectare forest per person is the rule when approached from a county basis (see table I-D, Appendix). In the United States, from a state-wide scale, forest per capita ranges from 0.14 hectare per capita in New Jersey and Illinois to over 13 hectares in Montana. (See table I-B, Appendix.) But in Germany even on this small scale, every administrative unit except Bremen shows at least a five percent proportion of forest. In some states of the United States - North and South Plains States - the proportion of forest

does not exceed four percent. Consequently, on any smaller scale it can be expected that many areas in the United States would be devoid of forest while others would be totally forested. Areas completely forested in Germany would be too small to depict on a reasonable scale for this report, but would be found in the well-forested regions shown in figure 9.

To gain a better insight of this forest-population relationship the information is displayed in pictogram form in figures 17 and 18. Although equivalent scales were used for both countries, the ellipses are not directly proportional to one another, having been arbitrarily established to accommodate the wide disparity in the minimum and maximum quantities, which would require a scale of unwieldy proportions if kept in a direct proportional relationship. Nevertheless, several features are readily apparent in the two figures.

Since the size of the base (horizontal) ellipse represents the absolute area of forest in the given area (state or county) and the size of the vertical ellipse shows the amount of forest per 100 inhabitants, their relative sizes would also indicate population density for the particular state or county. For example, a small base - large vertical ellipse would depict a relationship of a small amount of forest, a large amount of forest per capita and, therefore, a low population density. By using the same scale for both countries, the sizes of the vertical ellipses portray the relative amounts of forest per capita. Thus, most areas of Germany show small forest to population ratios when compared to the United States, revealing the relative population densities between the two countries. The vertical line serves only

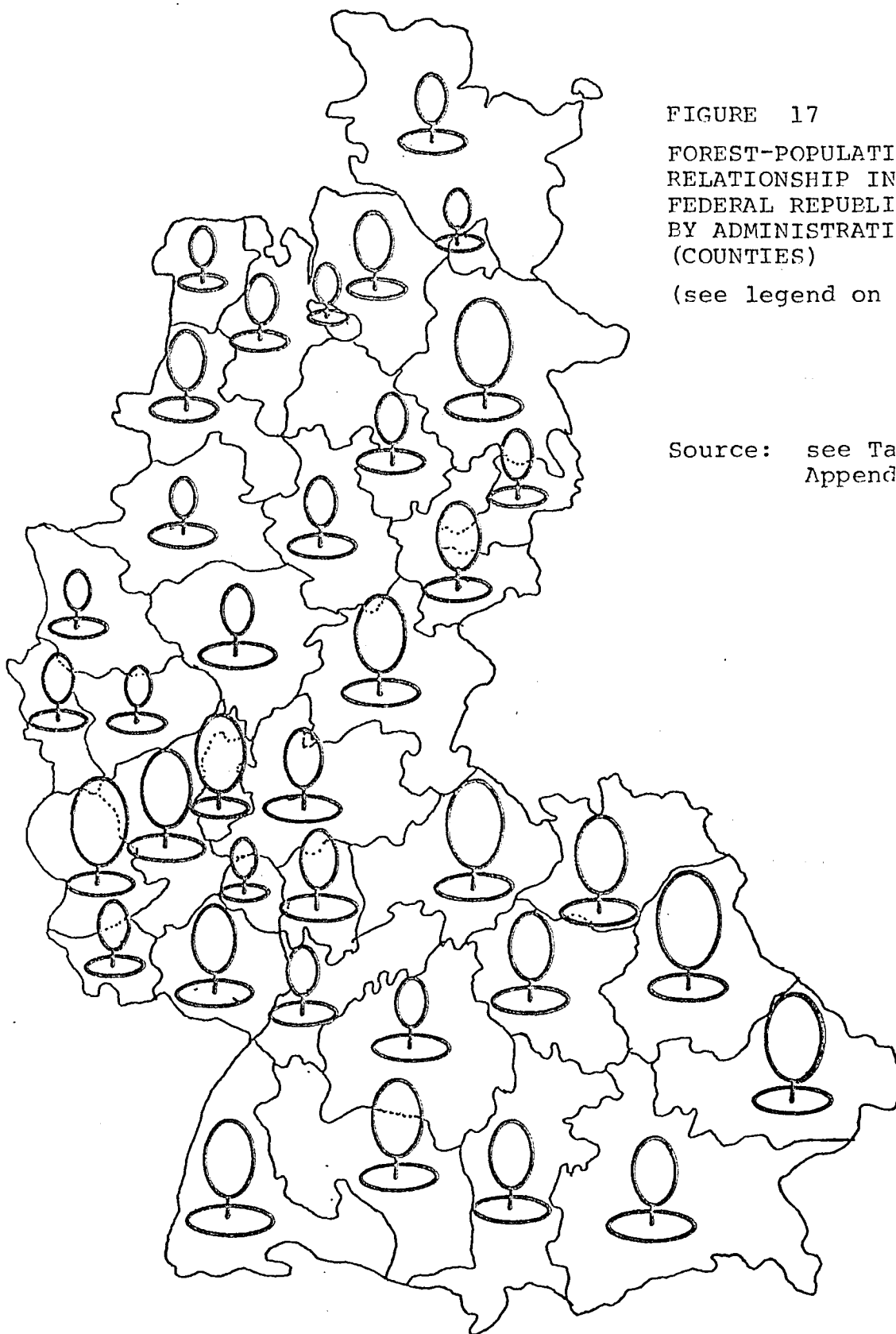


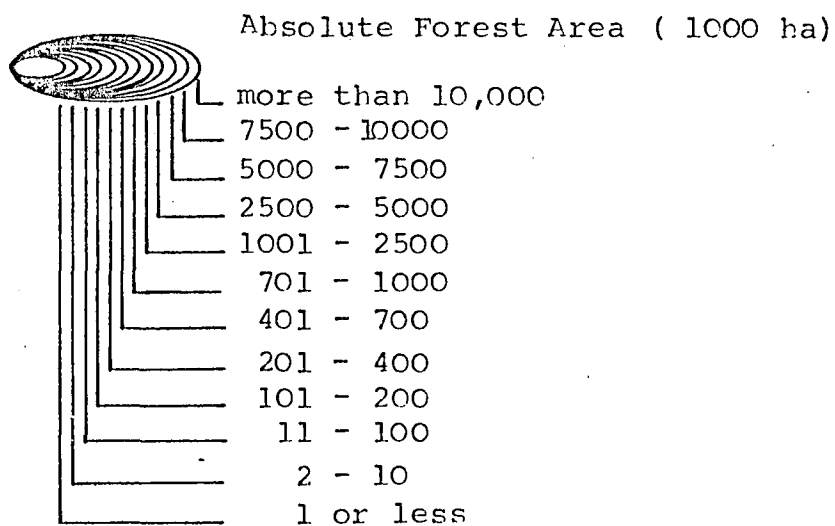
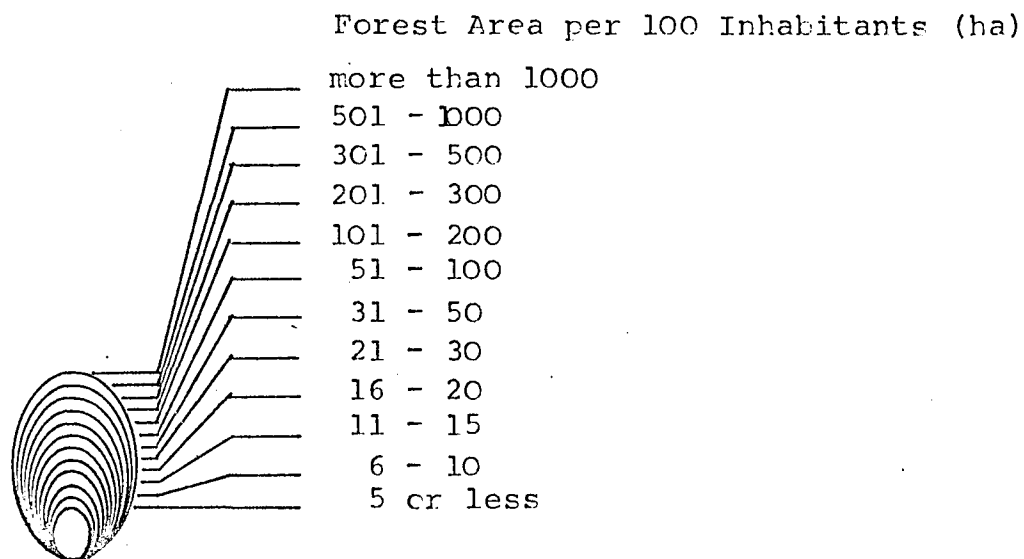
FIGURE 17

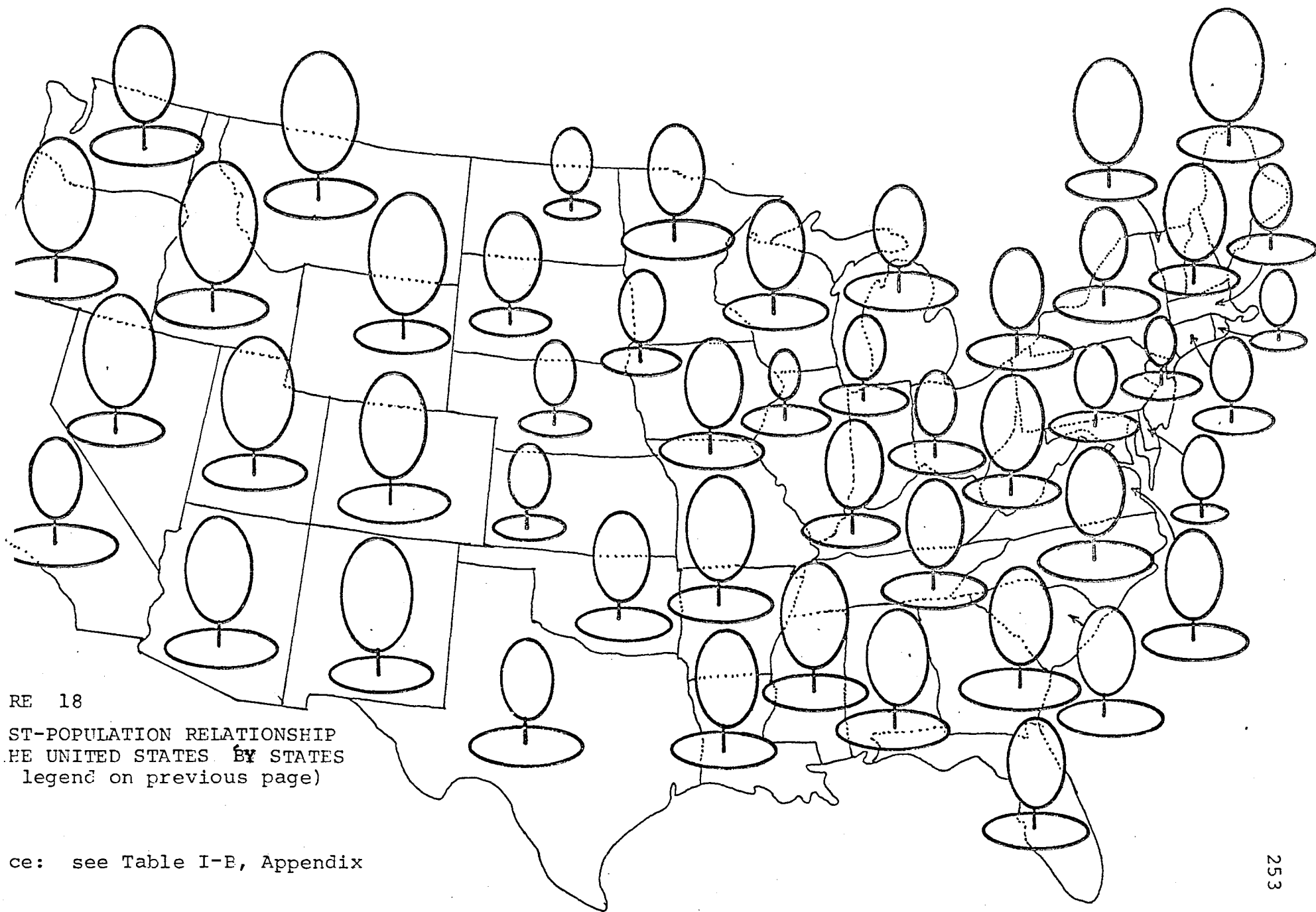
FOREST-POPULATION
RELATIONSHIP IN THE
FEDERAL REPUBLIC OF GERMANY
BY ADMINISTRATIVE UNITS
(COUNTIES)

(see legend on next page)

Source: see Table I-D,
Appendix

LEGEND TO FIGURES 17 + 18





RE 18
 ST-POPULATION RELATIONSHIP
 THE UNITED STATES BY STATES
 (legend on previous page)

ce: see Table I-E, Appendix

as a binder of the two ellipses and to determine the geographical area to which the two ellipses are related.

Moreover, figure 18 shows that on a state scale, the forests of the United States are generally where the people are. For instance, the Plains States have little forest (see also figure 13), but they also are very sparsely populated, giving a relatively high forest per capita figure. A high population density and high proportion of forest results in a generally good relationship in the East, while the sparse population and extensive forests of the Northwest show an extremely high relationship. That fewer people are settled in areas where forests are less extensive and migration is generally away from such areas is a phenomenon true for Germany as well as the United States, as seen in the small or negative net population growth of Northern Germany and some Plains States of the USA.

The total amount of forest in both countries can be expected to remain relatively constant as land use patterns have become more stabilized. The variable factor, then, would be population growth on a local, regional or national level. Even with little or no present natural growth in the populations, increases in population will take place for several generations, particularly in the United States where the growth rate has been higher in recent years. Consequently, an overall decline in the amount of forest per capita is to be anticipated, moreso in the United States than in Germany. Local and regional shifts in population will have a greater impact on the adequacy of forest recreation resources.

10.2. Process

Forests have always produced an environment suitable for recreation. Still, it was the advent of industrialization and the resultant increase in leisure for the masses that spurred the use of the forest, as well as other natural ecosystems, as a recreation resource. Soundings of forest aesthetics first occurred about the same time (around the beginning of the 19th century) in the German and American societies, with isolated cases of forest usage for recreation, primarily by "high society" recorded centuries earlier. Yet, by the turn of this century, reserving large tracts of forest land for recreation purposes had become a major facet in the American system while in Germany, official recognition of large scale recreation areas was forthcoming first in the mid - 50's.

Several reasons could account for this difference in emphasis. Obviously the abundance of forest resources and vast unsettled areas in the USA was more conducive for the reservation of extensive areas for recreation. At the same time, traditional forestry principles and economic factors influenced management decisions in Germany, while romanticism and a lack of a developed forestry system promoted non-economic forest values in the United States at the beginning of the 20th century. Moreover, the effect of two world wars was greater in Germany, requiring forest resource allocation to supply more basic needs and interrupting growth in leisure. Although the "Naturschutzgesetz" was spawned during the Third Reich, it was directed more at specific natural features, becoming a basis for recreational landscape reservations first in post-war years.

10.2.1. Role of Government

Because of historical political and land ownership pattern developments, the federal government in the United States and the state level of government in Germany are the focal points for providing forestry legislative guidelines. Yet, it is evident that the different levels of government in both countries are taking on similar roles.

With a federal forest law in the offing in Germany, more centralized direction and planning of forest activities is to be awaited, while the state will continue to be the mainstay of control and execution of policy for the entire forest resource under its jurisdiction. Whether coming from the national or state level of government, legislation affecting private property ownership rights and obligations has been and will continue to be directed at, in the first place, assuring the perpetuation of the forest resource and, secondly, making the forest resource benefits available to society, primarily by providing for public trespass rights, and the landowner being compensated by society for any costs incurred by providing such benefits.

Having a relatively large proportion of forest in its ownership, the federal government in the United States has evolved as the main level for legislative direction and deriving forest policy, the state acting as the controlling agency of the cooperative programs for local public and private levels. Except for voluntary participation in these cooperative forest management programs, private forest ownership has been largely uncontrolled. It can be expected, however, that the state will become more active in forestry in the future

as regulation of private forests begins to materialize, with the federal government establishing guidelines and providing financial assistance, and the individual states developing planning and acting as the regulatory authority.⁸

The legal framework of both countries has been effective in designating areas with recreation in mind. Although the total area of Wilderness and National Parks of the United States is quite large in comparison to similar areas in Germany, looked at as a proportion of the national land area, the areas set aside in each nation attain similar percentage figures for the various categories. For example, present areas of the National Park System and Wilderness areas would comprise some two percent of the land area of the 48 States while "Naturschutzgebiete" take in a little over one percent of the area of Germany. Similarly, the National Forest System and "Naturparke" compose some 10 and 15 percent, respectively, of the total area of their respective countries.

10.2.3. Economic Considerations

Financing the planning, development and acquisition of outdoor recreation resources follows much the same pattern in both cultures, the federal and state agencies providing funds and sharing costs with local levels. In addition to the aforementioned areas of the United States already being in federal ownership and, therefore, legally and financially secure, the Land and Water Conservation Fund Act of 1965 (L+WCF) established a separate trust fund to further outdoor recreation rather than rely solely

on appropriations for this purpose. Being maintained by monies derived from surplus federal property, motorboat fuels tax, admission and user fees, and other revenues, the L+WCF provides a continuing source of funding for federal and state agencies to acquire, plan and develop outdoor recreation resources.

Planning the development and having a financially secure basis for the present nature parks in Germany is seen as more important by some people than further expanding the area through additional parks.³³ Since most nature parks are composed of a multiform of ownership and funding relies heavily on governmental appropriations, reliable financial sources are a consideration of utmost importance in assuring the proper planning and development of the nature parks.

The L+WCF also authorized the charging of admission and user fees for designated federal public recreation areas and facilities. Arguments for or against charging fees for utilizing outdoor recreation resources are many. On the one hand, a user fee system provides equity in that only the user pays; aids efficiency of resource utilization since no charge would encourage wastefulness; effects user attitude by less abuse if one has to pay; can be used as a management tool to reduce overuse in particular areas; encourages private development by decreasing competition to private outdoor recreation enterprises; and provides revenue. On the other hand, user fees may be infeasible to administer in some areas; if applied in daily recreation areas, they could cause hardship for the poorer segment of society. Fees would also be subject to economic depressions and are often opposed on philosophical principles.¹⁸

The practice of not charging user fees in Germany would be founded in part on administrative infeasibility of implementing a user fee system because of the accessibility of forest resources, in addition to the long-standing tradition that the forest resource should be open to the public. Furthermore, providing intensively developed sites, as campgrounds or overnite facilities, etc, has been left to private enterprise, with only minimum user facilities being made available in more remote areas by public forestry agencies. Even though not all of society utilizes the resource, any costs are borne by society as a whole.

In the United States admission fees are charged on an annual or daily basis for entrance to designated areas administered by the National Park Service and National Recreation Areas under the administration of the Forest Service. User fees are charged for utilizing particular sites, facilities, equipment and services, such as well-developed campsites, boat facilities, firewood and winter-sport facilities at any designated federal recreation area. Fees charged are in accordance with costs for establishing and maintaining the site or area, the quality and variety of recreation opportunities offered in the site or area, the amount charged for admission to or use of comparable federal, state, local and private areas, and the impact of fees on potential development of outdoor recreation facilities by other public or private agencies. In general, fees are only charged in areas which have services and well-developed facilities superior to those found at the average site or area.⁵⁶

The overall forest economic situation in Germany has tended to promote more intensive management of the

resource with attendant influences on its development for recreation purposes, especially in the form of basic facilities as roads and trails. Shelters and benches could be provided through manpower available under the forest worker system. Although the general timber market conditions have not been as favorable in the last decade, the skill of these workers has been reoriented toward the construction of special-use forest recreation facilities.

In comparison to Germany, economic conditions in the United States are not as favorable for intensive forest management, but the trend is toward improvement in this area on all forest ownership. If the trend continues, it is to be expected that forest recreation will also have on accompanying advancement by the resource becoming more accessible through necessary roads. This would be particularly advantageous on the large segment of forest in small, private holdings in the East and around populations centers.

10.2.3. Educational Implications

Professional forestry education in the United States has become more specialized than in Germany, but there is a trend evident that greater concentration in specific areas of study is becoming more prevalent there also. Management of extensive forest areas and special facilities purely from a recreational standpoint since the turn of the century has undoubtedly promoted specialization of the forest recreation field in the United States. The nature parks of Germany, having expanded rapidly since the 50's, are and will further

increase the need for outdoor recreation and landscape planners.²¹

The need for integrating forest policies with broader environmental and natural resource programs has educational as well as management implications, particularly around urban areas, where open space and green belt planning almost invariably involves forest land. Urban development in the United States apparently has resulted in more "green" within the communities themselves, but the urban sprawl has left the city core farther from the forest than in Germany, where cities tend to be compact with forests on the outskirts. In either case a total environmental approach to planning is bound to become more dominant, requiring not only specialists, but generalists to provide land use and managerial direction and to avoid communication gaps among the multitude of interdisciplinary fields necessarily represented in such planning.^{13,40}

Foresters need to work closer with sociologists and other associated disciplines to determine: actual interests, wishes and behavior of recreationists; preferences and reasons for selecting a recreation area; regional differences in leisure and recreation behavior; differences of demand, needs and behavior according to social levels, interests and age groups; influence of forest recreation facilities on needs and behavior; and behavior of the non-travelling vacation public.³⁹ Although progress has been made in this respect in the United States, much remains to be done, especially around urban environments. Lack of comprehensive national surveys suggests much needs to be done in this area in Germany.

In either society, four basic groups of attitudes of the

people toward forest environments are discernible: one group views the forest for its beauty, hospitality and scientific significance, where man is part of the environment and the forest a way of life; then, there are those who use the forest to renew themselves (campers, hikers); a third group may find the forest acceptable for short walks but feel dangers and discomforts lurk there; and, finally, there are those who find the forest fearsome - they may never have visited a forest and wish never to do so, and may see trees and forests as an unnecessary luxury.⁴⁶ These attitudes are probably more discernible in the United States where large urbanized areas have moved the forest farther from the people, but there is also a strong affinity to wilderness. Nonetheless, forest recreation surveys in Germany indicate a similar grouping of attitudes. These attitudes apparently play an important part in the behavior of certain segments of society toward their forest recreation resources.

Behavior of the public regarding recreation resources can take on two basic forms as was depicted earlier in figure 16. Obviously most forest visitors view the resource in a positive manner, reaping the recreational benefits the forest environment can provide. Still, there is that segment of society which has not yet learned how to utilize leisure time and the value of the natural environment, resulting in acts against society or behaving in such a manner as to have an adverse affect on the overall quality of the environment and the recreation experience of fellow recreationists. Behavior of this type runs the gamut from nuisance acts, littering and minor rule violations to vandalism, theft, arson and violent acts toward other forest visitors.

The problems of depreciative and degraded behavior are not unique to one culture, but seem to be similar in both the United States and Germany. Littering, arson, rule violations and vandalism, for example, are continually cited as major problems for recreation resource managers, the acts following very much the same pattern in both cultures.^{14,17,22,44,45,50} In the United States, the consequences of such acts as arson often have more drastic effects than in Germany, especially in more arid and remote regions. As a result, efforts have been made to determine characteristics of people who perform such acts against society.^{14,45}

Much research has also been undertaken to study and develop means of controlling the littering problems in the United States, where the cost of cleaning up after campers in National Forests alone amounted to 22 million dollars in 1971.^{12,15,16} Vandalism also cost 353,000 dollars in one year in 17 National Forests in California.²⁹ And simply being aware of rules of behavior in campgrounds was found to be lacking with the forest user.⁴² Since both cultures have basically the same problems in degraded behavior, neither educational system has succeeded in overcoming this phenomenon, although both forestry ideologies are actively engaged in public educational programs.

Another area in which education of the public will become increasingly important is in its participation in policy formulation and decision-making in forestry and forest recreation matters. This is especially true for the United States, where the public takes a more active part in decision-making processes. Managing the nation's forest resources can not be based on emotional inputs;

if the public is to fulfill its role in sound management decisions, it will also have to possess a working knowledge of forestry and possible long-range effects of public inputs on management techniques.

10.2.4. Forest ownership Effects

In both countries, developed forest recreation resources are mainly a function of the public sector. In the United States this is found on federal and state lands, while in Germany, corporate and state agencies have the main role. The large number of small private forest holdings are problematic in both cultures, not only for timber but also for recreation management.

With almost 60 percent of the total commercial forest land in small ownership in the United States, this sector of forest ownership will have to support a greater share of the recreating public in the future than in the past. The idea that only public lands should provide forest recreation opportunities is unfounded. Large private industrial forest lands are in the United States, for the most part, open to the public and often provide various user facilities, as campgrounds, picnic tables, shelters, playgrounds, etc, free of charge. Small, private ownerships can play a vital role in recreation merely by providing "room to roam" through road and trail systems developed by timber management practices. For more intensive recreational use of the small private forests, society as a whole must be prepared to bear any costs incurred by the small landowner in providing such benefits.

A trend in both countries is the purchase of private lands by public agencies. One of the aims of the L+WCF Act is to acquire lands suitable for recreation; by 1973, over 400,000 hectares had been purchased with monies from this Fund.³⁸ Not particularly directed at procuring recreational lands, but to better the forest land ownership pattern in general, public purchase and exchange of private forest lands has grown in the past decade in Germany. As the profit margin of timber growing worsened, more private lands became available for purchase, and at the same time, the price per hectare halved since 1965.⁵ Exchange and purchase of private lands to improve ownership patterns also has been a facet in the American system since the turn of the century. However with more current regulatory control and comprising much less of the total forest area, the private forest lands in Germany are seen as being less problematic for future recreation management than in the United States.

10.2.5. Forest Recreation as institutional process

Establishing the Bureau of outdoor Recreation at the federal level of government in 1962 can be viewed as the point when outdoor recreation officially became institutionalized in the United States. Although outdoor recreation was a part of the American scene since the latter part of the last century, establishing the BOR in the society's ultimate level of authority to plan and coordinate the nation's outdoor recreation resources was the step toward an organized behavior pattern.

While the Division of Forestry and Wood Industries in Germany's Federal ministry of Food, Agriculture and Forestry does not officially include a "recreation" department, it does act as the official agency for interregional and international matters concerning the protection of nature and the establishment of nature parks. Each state has its own nature protection organization. Since "Naturparke" are essentially created for recreation purposes it is more a question of designation of title than of an organized system. In essence, then, outdoor recreation has reached the institutional stage in both societies, but in Germany the process is somewhat more obscure and decentralized, the latter resulting in inherent drawbacks.

An important element lacking in the German recreation planning system is nationwide information on demand for outdoor recreation. While numerous national surveys have been conducted in the United States in attempts to determine the wants and needs of the people, no comprehensive national data in this respect exists for Germany. Most efforts have been conducted at the local, on-site stage giving information on that segment of the population already using the resources, but provides little insight to overall demand characteristics.

Determining supply and demand relationships of outdoor recreation resources was further promoted in the United States by the provisions of the L+WCF act, which required a comprehensive state outdoor recreation plan to obtain money through the Fund administered by the Bureau of Outdoor Recreation.

10.3. Means

Compared to Germany, forest management in the United States is one of extremes. While gigantic trees remaining in the virgin forests of the western United States require the use of equally huge harvesting and processing machinery there are cases where second growth forests of the East, South and Rocky Mountain area are harvested in a rather primitive but environmentally favorable fashion by oxen and horses.^{1,36} Management intensity ranges from that of the highly productive forests of the wood industry to "non-management" of small woodlots.

Forestry management, in general, is on a far more intensive scale in Germany than most management in the United States. Yet, recreation management was carried out more as a secondary function in Germany prior to 1950, whereas in the United States forest recreation management in federal forests, was an important element since the establishment of the National Park Service and Forest Service around the beginning of the century. In other words, these agencies have been involved in providing developed recreational resources as campgrounds, picnic areas and visitor centers for decades, while in Germany forest recreation management was confined more to such activities as walking and hiking, which require roads and trails gained through timber management, but need little investment for facilities. Resting benches and small shelters constructed in conjunction with these facilities are also not capital intensive. But demand for forest recreation increased greatly in both countries since mid-century. Subsequently, recreation management in the two cultures became more convergent.

With increased demand for forest recreation also came closer public scrutiny of applied forestry practices, moreso in the United States than in Germany, leading to such remarks as: "clearcut areas often have little usefulness for outdoor recreation for a period of years..."⁴⁷ or "As for recreation use the clearcut area is of practically no value for years and it is scenically offensive."³⁴

Statements as these fail to consider all aspects of clear-cutting and are perhaps based on personal opinion. As has been portrayed throughout this report, the forests of Germany have experienced a tremendous transformation over the centuries and, as a national resource, have been and are some of the most intensively managed forest lands of the world. True, mistakes were made in the past where some species were introduced to sites outside their provenance, leading to such adverse affects as soil podsolization and reduced yields. Nevertheless, the forests of Germany remain among some of the most productive on the globe considering the natural limitations. It was also noted that the clearcut system of management evolved and was refined early in the history of forestry in Germany, and continues to be its major silvicultural harvest system.

Further, surveys revealed that most German forest visitors are aware that management activities are being carried out, but very few have any adverse feelings in this respect. In general, the German people are just a proud, or even moreso, of their forests as the American is of his Wilderness heritage and therefore, would perhaps tend to be biased in his views. But seldom, if at all, are adverse comments mentioned by foreign visitors regarding the appeal of Germany's forests.

Moreover, it was indicated that the preference of the German forest recreationist centers around extensive forests, but with frequent open areas, natural or by clearcutting, seemingly to have the opportunity to perceive the scenic values about him. Whether this facet would hold true for the American public is subjective. Yet, photographs of wilderness dispersed throughout literature^{11,24,25,48} consistently show no extensively closed forest cover but rather forests profusely broken by mountain meadows, other natural openings, or consisting of low-stocked, open forest lands. Furthermore, wilderness areas, although encompassing large land areas, include relatively little commercial forest land. These factors would lead one to the conclusion that much open space and sparsely forested areas are inherent in the American wilderness.

It should be added that these features are more applicable to "wilderness west", where most present areas are located and, consequently, strong emphasis in research has been directed. Nevertheless, it does indicate that wilderness does not necessarily denote a dense continuous forest cover; it is a natural environment which is often comprised of ecosystems involving large amounts of open space in conjunction with forest lands. But these lands obviously appeal to the American public, possibly because vast forests would be grandeur, but monotonous.²⁰

Sound reliable information is lacking in this respect. Even the in-forest surveys of Germany must be viewed with caution because of the techniques employed. For example, less than ten percent of the people questioned preferred "Urwald" (asked in only two surveys), but what mental picture is generated when "Urwald ohne Weg oder Steg"

(primitive forest without road or path) is mentioned?²⁷ Since no "Urwald" remains in Germany and the German dictionary⁶⁰ reveals that it connotes a strong reference to the Tropics, the term could very well engender a "jungle" in the minds of many people. But taking the data for what it is worth, a positive correlation does seem to exist between the German and American cultures regarding the desire for open spaces in forests. Creating these openings artificially by clearcutting in German forests is apparently a desirable management technique, keeping in mind that the use of the clearcut is generally quite small (one-half to five hectares) as compared to what evoked the clearcut controversy in the United States, where instances occurred involving clearcut sizes of more than 400 hectares.⁵⁹ There is no doubt that economics played a large role in this contrast in the size of harvest areas in the two cultures; concern for maintaining environmental quality, overriding many economic factors, has led to a more selective use and reduction in size (ten hectares in some forests) of clearcutting harvests in the United States.⁵⁵

In spite of the environmental effects of past forest practices in Germany, various forms of the clearcut silvicultural system continue to be applied in 99 percent of its forests,^{9,10} indicating not the failure of the system, but a misjudgement in its application. No doubt should prevail that clearcutting is also a silviculturally, economically, and environmentally necessary system in the United States.^{7,19,32,55,56,59}

By proper application of the means, regardless of the silvicultural system employed, the forest environment can be manipulated to suit the goals of society as long

as an awareness for the natural limitations of the resource and overall objectives of the society is maintained. In the past, it seems the lack of the former was the case in Germany, while failure to adhere to the latter precipitated the controversy in the United States. With a better understanding of both of these major regimes of the forestry ideologies, future judgements in the application of the means can avoid these past pitfalls in both cultures.

10.4. Utilization

While the forest recreation resource of the United States allows a reasonable degree of delineation into the three major categories of daily, weekend and vacation recreation areas, those of Germany show far more intermeshing, making it difficult to discern one type from another. From the standpoint of intensity of use, the greater portion of the forests of Germany would fall in the intermediate category, with the forest areas near urban environments attaining use intensities of daily or user-oriented areas. However, from the standpoint of facilities development, the forest resource maintains its natural character, development directed more toward basic provisions for walking and hiking; special developments as campgrounds, youth tenting areas and picnic sites are normally located in related forest environments as meadows and other openings.

More homogenous forest resource development would also be the case in Germany. Although various categories of

forest areas have been delimited, restrictions on the degree of facilities development are not as pronounced as in the United States. Research natural areas and "Naturschutzgebiete" would have similar legal restrictions regarding development, but wilderness areas and national parks of the United States have more legally prescribed limitations on development than the nature parks of Germany. Other categories of resources would have similar restraints on development in both societies in the legal sense, but vacation-type recreation areas in the United States - National Forests and Parks, for instance-necessitated development of campgrounds capable of accomodating the seasonal visitor on extended trips. This is not so much the case in Germany, where vacation areas blend with weekend and daily areas.

Facilities provided determine to some extent how the resource is utilized, as does what the natural resource has to offer. But the implicit value system of the culture also has a pertinent role in how the society pursues forest recreation. Many activities allow little variance in their pursuit - winter sports, sightseeing, bird and wildlife observation, pleasure driving, etc, while others-hiking, camping, hunting, etc - can take on many forms, depending on the type of facilities and attitude of the people.

10.4.1. Walking and Hiking

At first glance this activity would appear to be too basic for variation in its pursuit. Yet, quite a contrast can be seen in walking and hiking, as recreation activities,

in the two cultures. The difference between walking and hiking is rather nebulous, hiking considered here as being outfitted with a pack with provisions for a day's outing.

In Germany, it is not uncommon to walk through the forest in a business suit, particularly on weekends. Walking and Gasthäuser go hand-in-hand in the German recreation system, the one complementing the other. When hiking, more comfortable dress is the case. If the hike includes overnight stays, they will be made in the numerous "Jugendherberge" (youth hostels), hiking club facilities or forest inns, where modest to modern accommodations are available.

It is also common for hiking club members to meet at a designated point and set off in a large organized group on an all-day hike, frequently returning to the point of departure by prearranged charter bus. These clubs, and other organizations, have sponsored "peoples marches" in recent years, inviting the public to participate in a hike over a predetermined route and giving out medals for taking part in the event.

Although in a different way, the Americans utilize their forest resource for walking and hiking far more than is usually thought. For example, of the over 178 Million visitor days spent in the National Forests in 1971, 61 percent were in the dispersed areas along roads and trails and in undeveloped country.⁵² Other indications of the amount of walking and hiking are seen in the overuse of trails: From 1969 to 1972, the use of Appalachian Trail facilities increased 100 percent, the use being twice of design capacity;³ in 1973 alone it

was estimated that two and a half million people used the trail;²⁶ almost 16,000 persons climbed the 18-kilometer trail to Mt. Whitney in 1973, necessitating restrictions on its use;² there is an estimated 10 million backpackers in the U.S.;³ and many wilderness areas are already being overused. Apparently both societies do a great deal of walking and hiking, but in different ways.

10.4.2. Camping and picnicking

Camping in the United States is far more variegated than that found in Germany. It may take the form of: backpacking by carrying along provisions and shelters to be totally independent of civilization for extended periods; tenting, from pup tents to large family size; foldout, trailer and pickup campers; VW and other van Campers; or motorhomes. Since camping outside campgrounds is generally prohibited in Germany, backpacking is essentially non-existent. Tenting, small vans and trailers are the dominant means for pursuing this activity although, there is a noticeable trend toward larger trailers. In some respects, camping at developed campgrounds-some public and most private - in the United States has attained a degree of development approaching that of hotels and motels, whereby reservation of campsites can be made in advance.

Picnicking is a relatively new activity in Germany, but is in heavy demand as indicated by intensive use of constructed sites in larger meadows or playgrounds. Usually firewood has to be gathered from the nearby forest by the user; in campgrounds open fires are not normally permitted as in the United States, where a table and grill or fireplace are often an integral part

of forest campsites. Immediate access to the site by vehicle is also not usually the case in Germany. This feature, and not having individual grills and tables would probably not be too readily accepted in the American recreation system.

Since the first decades of the century, as the automobile evolved into a major means of transportation, trailer camping in national parks and forests was already on the scene in the United States and has continually grown. Camping and picnicking in Germany has had a late start, but is probably increasing more rapidly than in the United States. With a more limited resource, it is doubtful that it will reach the proportions found in the American system and there are already reverberations being heard that camping trailers in the natural landscape detract from its aesthetic quality.

10.4.3. Hunting

While modern German hunting administration rights and regulations have evolved through centuries of tradition, those of the United States stem from English influence of colonial days, giving sovereign rights over game to the individual states in trust for their respective citizens. German hunting rights, on the other hand, have developed through the millenia, running the gamut of earliest free hunting for all to being severely restricted to a small circle of nobility, with heavy penalization for poaching during the Feudal Era, which helped to spur on the 1848 Revolution. However, opening all lands to uncontrolled hunting for all people led to near extermination of many species of animals, forcing states to enact restrictive legislation.⁶¹ Some states passed laws which correlated

the landowner's right to hunt with a specified minimum area of contiguous land holdings, a feature still common to German hunting laws.³⁰ The "Reviersystem" is an areal system of management and the right to hunt has emphasis on land ownership. Anyone wishing to hunt must have a valid shooting license and, in some cases, a hunting permit, both of which are issued by responsible administrative authorities to those who have successfully passed a written hunting examination. The legal basis of modern hunting rights is an off-shoot of the central hunting and game administration organized during the Third Reich.¹⁰ Although generally declared invalid by occupying forces after the war, later federal and state laws have included many of the basic provisions of the Reich's Hunting law of 1939, which included that: a minimum land area of 75 hectare was needed to exercise the right to hunt; wildlife population levels should be maintained at levels compatible with land use; and only persons familiar with game, firearm safety and proper hunting practices would be issued hunting licenses.⁶¹

Since a minimum area is specified and large contiguous areas in single private ownership are rare, associations are formed, whereby the hunting rights are leased from a group of landowners to secure the necessary area required for management. In 1973, such associations accounted for 73 percent of the total hunting area of 24 million hectares, while federal and state lands made up ten percent, the remaining 17 percent consisting of corporate and private land.⁹

A common sight in Germany is the "Hochsitz" (high seat). Constructed simply as a seat, or more elaborately as a small "tree house", on stilts, the "Hochsitz" is used for game observation or also as a shooting platform. While the game technically belongs to the landowner, the federal

government prescribes the season when particular game can be hunted, the individual states adjusting their seasons to fit special circumstances. Open seasons, depending on the game species, run from late summer into late fall, with some game being hunted year round, similar to the practice in the United States.

Although the game is public property in the United States, a private owner can prohibit trespass of hunters on his land. It is during hunting seasons when most "no trespassing" signs are seen, particularly on farms where the owner has had a "bad" experience with hunters; but by asking permission to hunt on his land, access is often allowed.

Game management is primarily a state function, even on federal property within their boundaries, the exceptions being federal wildlife refuges and migratory wildlife control. Many states have established "compartments" in which hunting is restricted, in addition to the "bag limit" (amount of game a hunter may shoot in one day or season) that is valid statewide. As long as a person has a current hunting license and the property is open to hunting, few other prerequisites are necessary, although hunting examinations are becoming a requirement in some states. Shooting preserves, (plant-and-shoot farms) where the hunter can pay a fee to shoot owner-raised wildlife, thereby making it a year-round operation, are also becoming more popular.

In Germany only some 200,000 hunters, or 0.3 percent of the total population pursued the sport in 1973.⁹ This results in about 120 hectares area per hunter. In 1970 hunters numbered over 14 million, or 7 percent of the population, in the United States, spending 204 million recreation days afield.⁵⁸ In comparison to Germany, total hunting area in the United States would be some 30 times greater; however,

the number of American hunters is some 70 times greater, resulting in an actual hunting area per hunter less than half that of the German "Jäger". Taking the hunters examination, buying an annual hunting license and perhaps a permit, and procuring required liability insurance makes the sport somewhat more expensive in Germany. But even if the opportunity were made available to the public, it is questionable whether more participation would ensue; one wins the impression that the average German citizen would rather observe than destroy an animal.

It can hardly be advanced that the two different hunting systems have had any major different influences on wildlife populations. It is clear that sufficient wildlife is also available in the United States through controls, seasons, etc; excessively high game populations (as are often found in Germany and create damage to reforested areas) would be easier to control through the American license system than by the prescribed shooting program in the German "revier" system.

10.4.4. Gathering

A sector of forest recreation which is of importance in both cultures, but is frequently neglected, is the recreational benefits derived from the gathering of forest mushrooms, berries and other forest products. Although people indulging in the "gathering" would be a relatively small number as compared to participation in some other activities, the value of mushrooms, huckleberries and other wild fruits can exceed the value of timber production.

Gathering is considered a valuable recreation activity in Germany, where mushroom production in forests was valued at

over 44 million German Marks in 1965; wild berry production was some 6600 tons, valued at over 13 million Marks in 1964.⁴ These products occur naturally in small patches or isolated bushes throughout the forests on poorer sites in Germany, but forests themselves are not managed for their production per se. It is reasonable to assume that generally more people take part in gathering activities in Germany than in the United States, mainly because the forests are more accessible.

Gathering mushrooms in the United States is generally not promoted because of the inherent danger of poisoning; most large cities in Germany have an advisory facility, usually at a museum, where experts help the neophyte mushroom gatherer separate the edible and non-edible plants if there is question of identification.

Wildfires have created suitable conditions for berry production in many parts of the United States. For example, wild huckleberry fields occupy some 65,000 hectares in the Pacific Northwest Region alone. A survey at one, 1000 hectare field showed recreation benefits of 169,000 visitor days by pickers. In 1969, the yield of the berries picked being more than one million liters with a value of 750 dollars per hectare. Since most fields occupy poor or marginal sites, the value of the berries alone equal or exceed timber values.³¹ Old burn areas in the East provide similar opportunities. But since berry fields are ecologically temporary stages in natural succession from a treeless burn to climax forest, without disturbance the sites will revert to brush and trees; consequently, if this type recreation is to be furthered some manipulation of the site would be necessary.

In Germany the forest resource is too limited to permit any special management for "gathering" recreation, except perhaps on a very small scale on exceptionally poor sites, and will

probably remain as a by-product of normal forest management. Little effort has been made to promote this facet of forest recreation in the United States, but would have good potential, especially by educating the public regarding mushroom identification and some management of productive berry fields. But also in Germany, research should be undertaken to determine how some of the more popular types of mushrooms could be artificially propagated in cases where a drop in natural production has occurred in some forests.

10.5. Products

The forest recreation environment, as a product of natural limitations and human inputs on the resource, has taken on some contrasting features between the two cultures. The American forest has retained much of its natural character; the forests of Germany have been strongly culturalized, losing much of their original site distribution and, consequently, some of their natural quality. Small monocultural or limited-species stands are the rule in Germany, while being the exception in the United States, although extensive pure forests occur naturally there also.

A wide variety of climatic conditions in the United States has evolved a corresponding diversity of natural forest ecosystems; the formerly extensive hardwood forests of Germany have been largely modified by human action, but perhaps to the betterment of the recreation environment, if the public preference for mixed forests is taken as an indicator. Although basically under a monocultural system of management, diversity in the forest is maintained by making small harvests, resulting in an variety of age

classes and frequent changeover of conifer and hardwood types in a relatively small area.

With growth in demand for both forest recreation and wood, and the total forest resource remaining relatively constant, both societies have strived for compatibility in production of these products. To be effectively used, both products must be made available to society- wood must be transported to the consumer and the forest environment made accessible to the user. In either case, an access system is required. In this respect, intensive management for one product will complement the production of the other, other factors being constant.

Although a nebulous term, solitude is apparently a major motivating factor in both societies for using the forest for recreation. Under the dense population conditions in Germany, the relatively large amount of roads and trails permits better dispersal of users by providing more alternatives in route selection. There is no reason why the vast forest resource of the United States could not provide a desirable degree of solitude for the American recreationist if it were made more accessible, thereby alleviating heavy use of National Parks and wilderness areas and making the resource available where the people are. Roads and trails themselves do not impinge on the degree of solitude; it is the number of people in a given area. The latter can be more effectively managed with an adequate access network.

But intensive management for wood brings with it the question of maintaining the aesthetic quality of the forest environment for recreation. Even with the degree of intensive timber management in Germany, the forests have continued to provide a high quality forest recreation environment. From

all indications, extensive unbroken forest areas do not have the attraction of those interspersed by openings; thus intensive management can modify a monotonous forest environment by promoting diversity through introduction of contrasting timber types - conifer versus hardwood - as well as various age classes and creating open areas. Avoiding strong manifestations of management practices and retaining the natural character of the forest environment is already within the realm of the capability of the means.^{53,55}

More intensive special facility development in Germany would promote greater diversity for forest recreation activities. There is an obvious demand for such facilities as grills, fireplaces, playgrounds, etc. Many of such facilities have already been constructed near urban areas, but providing such developments in more isolated forest areas and in the vicinity of roads could be used as a technique to draw recreationists to less congested areas.

10.6. Goals

While the goals of the German and American Societies were more divergent in their goals in the past, they have become increasingly convergent in recent decades. Supplying forest recreation needs simultaneously with associated forest products has become a prominent concern in both cultures. Proportional to their relative sizes, large areas of the landscape, including other ecosystems as well as forest environments, have been designated for recreation purposes. Forest policy guidelines are similar, with multiple use from a national view as the focal point.

With a much denser population and a corresponding smaller forest to people ratio, an objective in Germany is to open all forests for recreation, regardless of ownership, the society as a whole bearing the costs. In the United States the era of "hands off" private forest property is fading as revelations of regulatory measures increase for better management on this large segment of forest holdings.

Maintaining the aesthetic quality of the landscape is pursued in both countries, whether it be of natural or cultural characteristics. Having transformed the greater portion of the forest landscape through artificial regeneration, a cultural forest is the rule in the German environment and one which all efforts are taken to maintain rather than allow it to revert to a natural state. For instance, it is not an inexpensive undertaking to subsidize the mowing of former mountain pastures and removing invading trees from open areas once used for grazing because "wild" fields and open spaces are generally found unattractive.^{6,23,35,37,41,43,51} But, at the same time, development of the landscape will stress avoiding sharp field-forest edges, converting pure stands to mixed forests, preserving natural streams and preventing scattered, individual homes on the landscape.^{21,62,63}

American endeavors are directed at preserving the last remnants of the nation's natural heritage and improving the aesthetic quality of the rest of the forest resource by adapting forest management practices more compatible with forest recreation requirements.^{54,55} Forest recreation management will continue to dictate harvest techniques which leave a more natural appearance of the landscape by avoiding obtrusive cutting methods and designs, and implementing advanced logging practices, as balloon and helicopter harvesting. While meadow mowing is also practiced in some parks, particularly near urban areas, the Americans are

probably more inclined to leave and accept open areas in a natural state, both on aesthetic grounds and for the natural benefits thereby derived in providing wildlife habitat - even around some populated areas.⁴⁹

Off-the-road mechanized travel will continue to be prohibited in the forests of Germany. In addition, specific trails will be designated for such conflicting recreation uses as hiking and horseback riding. In addition to wilderness and certain other areas where legally prohibited, mechanized recreational use of other forest environments will also see greater restrictions in the United States. Other conflicting activities will also see more separation.

More attention will be given to providing special recreation facilities in Germany. So, for example, in Baden-Württemberg during the 1971-80 decade, an eightfold increase in fireplaces and grills; a fivefold growth in forest sport paths; triple the number of playgrounds; and a doubling of riding trails, animal parks and nature trails is envisioned.⁶² Facility development in the United States will continue to grow to meet demand, but not in the proportions indicated for Germany.

In both countries it is evident that forestry is becoming more integrated into environmental and landscape planning, and subsequently, into local, state and federal planning and development programs. With a federal forest law, together with numerous other related and proposed federal legislation regarding nature protection, the central government in Germany is seen as becoming more active in policy formulation, while in the United States the state's role in forestry and recreation can be expected to grow. Protecting and improving the quality of open space environments in urban and community areas is a goal of both forestry ideologies.^{54,63}

Involving the public in forestry policy and program formulation is unique to the American system; but expanding public understanding of environmental conservation, promoting scientific forest and recreation research and professional education, and encouraging international cooperation are aims common to both societies.^{21,54}

All these efforts are designed to improve the quality, increase the quantity, and further the type of forest recreation product to meet the needs and wants of their respective societies. Until mid-century, goals of the American and German forestry ideologies were quite different. Beginning around the mid 50's the goals of the two cultures began a convergent trend, even to the extent of the roles of their different levels of government, economic considerations, forest policies and pursuit of forest recreation. Continuation of this trend can be expected in the future.

10.7. Satisfaction of needs and Aspirations for Forest Recreation

Forest environments are vital for the physical, spiritual and mental health of an industrialized society. It is no coincidence that: many spas, convalescence homes and health resorts are located in or near forest environments; forested areas are selected for religious retreats, and youth and summer camps; or psychiatrists feel wilderness is important for mental health.²⁸

The various quantitative factors used to measure forest recreation in this report provide some insight to the desires of a people. Yet, to determine the satisfaction of forest recreation needs and desires of a society, more must be known

in reference to what makes people want forest recreation. These would be the infinite number of intangible values which are affected by broad social trends and ideas that develop "taste"-an implicit individual and cultural factor. Different elements of one society can be introduced to another culture; their basic function may remain unchanged, but their application must be altered to make them acceptable to the "taste" of the recipient culture. Implicit characteristics of individual societies make them unique, but create an array of wants and wishes which create difficulty in fully understanding why they behave as they do. To state whether one society's forest recreation system is superior to the other in satisfying needs would be purely conjecture. In their own way each culture has pursued its goals in fulfilling its recreation objectives.

In either case there is obviously some redirection of policies necessary; it is evident that this reorientation is already in progress, but in democracies, where the goals are ultimately the will of the majority of the people, conflicts of interest are bound to occur. A course of action appearing desirable to an individual may not be the "best" policy for the society as a whole and what is a desirable approach in one society may have a totally adverse impact in another culture.

The various criteria used in judging the policies and programs of a culture can not be based on the explicit value system of that culture alone. They must also include the implicit behavioral pattern, a feature not in the realm of present technology. Both societies under scrutiny in this study appear to be moving from traditional and emotional decision-making processes to more analytical approaches to forest recreation policy formulation. This trend can be expected to continue as more knowledge and understanding is gained in and between the two forestry ideologies. This research is hoped to be a contribution to this end.

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APPENDIX I

TABLE I-A

CONVERSION FACTORS

Measure	Abbreviation	Metric		American	
<u>Linear</u>					
1 centimeter	cm	1	cm	0.3937	in.
1 meter	m	100	cm	3.2801	ft.
1 kilometer	km	1000	m	0.6214	mi.
1 inch	in	2.54	cm	1	in.
1 foot	ft	0.3048	m	12	ins.
1 yard	yd	0.9144	m	3	ft.
1 statute mile	mi	1.6093	km	1760	yds.
<u>Area</u>					
1 square centimeter	cm ²	1	cm ²	0.1550	in ²
1 square meter	m ²	10,000	cm ²	10.7639	ft ²
1 ar	a	100	m ²	119.5990	yd ²
1 hectare	ha ²	100	a ²	2.4711	acs ²
1 square inch	in ²	6.4516	cm ²	1	in ²
1 square foot	ft ²	0.0929	m ²	144	in ²
1 square yard	yd ²	0.8361	m ²	9	ft ²
1 acre	ac ²	0.4047	ha ²	4840	yd ²
1 square mile	mi ²	2.59	km ²	640	ac ²
1 square kilometer	km ²	100	ha	0.3861	mi ²
<u>Volume</u>					
1 cubic meter	cbm	1000	cdm	35.3147	cu.ft.
1 cubic inch	cu.in.	16.3871	ccm	1	cu.in.
1 cubic foot	cu.ft.	28.3168	cdm	1728	cu.in.
1 cubic yard	cu.yd.	0.7646	cbm	27	cu.ft.
<u>Liquid</u>					
1 liter	l	1	l	0.2642	gal
1 quart	qt	0.9463	l	2	pts
1 gallon	gal	3.7853	l	4	qts
<u>Weight</u>					
1 kilogram	kg	1000	g	2.2046	lb
1 pound	lb	453.5924	g	16	oz
<u>Combined wood Measures</u>					
1 cubic foot per acre	cu.ft/ac	0.07	cu.m/ha		
1 cubic meter per hectare	cu.m/ha	14.29	cu.ft/ac		

T A B L E I-E

POPULATION, AREA AND FORESTS OF THE UNITED STATES BY STATE, REGION AND SECTION
(48 contiguous states)

State /Region Section	Population (1971)		Land Area		Total Area Forested	Population Density	Percent Forested	Forest per Capita
	(x1000)	(%)	(km ²)	(%)	(1000 ha)	persons /km ²	(%)	(ha)
Maine	1,003		80083		7183	12	90	7.16
New Hampshire	762		23380		2077	32	89	2.73
Vermont	458		24002		1777	19	74	3.88
Massachusetts	5,758		20269		1425	284	70	0.25
Rhode Island	960		2717		175	353	64	0.18
Connecticut	3,081		12593		885	244	70	0.29
New England	12,022	5.86	163044	2.12	13522	74	83	1.12
Delaware	558		5133		158	108	31	0.28
Maryland ⁺)	4741		25776		1198	184	46	0.25
New Jersey	7300		19479		997	374	51	0.14
New York	18391		123882		7032	148	57	0.38
Pennsylvania	11879		116462		7217	102	62	0.61
West Virginia	1752		62341		4926	28	79	2.81
Middle Atlantic	74621	21.74	353073	4.60	21528	126	61	0.48
Michigan	8997		147156		7800	61	53	0.87
Minnesota	3881		205359		7683	19	37	1.98
Wisconsin	4476		141062		6048	32	43	1.35
Lake States	17354	8.46	493577	6.43	21531	35	44	1.24
North Dakota	625		179417		170	3	1	0.27
South Dakota	670		196724		701	3	4	1.05
North Plains States	1295	0.63	376141	4.90	871	3	2	0.67
Kansas	2258		211829		544	11	3	0.24
Nebraska	1512		198091		423	7	2	0.28
South Plains States	3770	1.84	409920	5.34	967	9	2	0.26

Illinois	11196		144387		1533	77	11	0.14
Indiana	5274		93491		1582	56	17	0.30
Iowa	2852		144887		994	20	7	0.35
Kentucky	3282		102694		4843	32	47	1.48
Missouri	4749		178697		6038	27	34	1.27
Ohio	10778		106125		2630	102	25	0.24
Central	38131	18.59	770281	10.04	17620	50	23	0.46
N O R T H	117193	57.12	2566036	33.43	76039	46	30	0.65
Virginia	4714		103030		6633	46	64	1.41
North Carolina	5146		126387		8342	41	66	1.62
South Carolina	2627		78283		5056	34	65	1.92
South Atlantic	12487	6.09	307700	4.01	20031	41	65	1.60
Florida	7041		140093		7257	50	52	1.03
Georgia	4664		150409		10338	31	69	2.22
East Gulf	11705	5.70	290502	3.78	17595	40	61	1.50
Alabama	3479		131334		8810	26	67	2.53
Mississippi	2226		122497		6845	18	56	3.08
Tennessee	3990		107040		5316	37	50	1.33
Central Gulf	9695	4.73	360871	4.70	20971	27	58	2.16
Arkansas	1944		134538		7397	14	55	3.81
Louisiana	3681		116369		6224	32	53	1.69
Oklahoma	2610		178146		3780	15	21	1.45
Texas	11460		678928		9750	17	14	0.85
West Gulf	19695	9.60	1107981	14.43	27151	18	25	1.38
S O U T H	53582	26.12	2067054	26.92	85748	26	41	1.60
Oregon	2158		249117		12304	8	49	5.70
Washington	3449		172416		9348	20	54	2.71
Pacific Northwest	5607	2.72	421533	5.49	21652	13	51	3.86
Pacific Southwest								
California	20223	9.86	404975	5.28	17163	50	42	0.85

Idaho	732		214134		8738	3	41	11.94
Montana	708		377071		9218	2	24	13.02
Wyoming	340		251756		4081	1	16	12.00
North Rocky Mt.	1780	0.88	842961	10.98	22037	2	26	12.38
Arizona	1849		293750		7521	6	26	4.07
Colorado	2283		268754		9120	8	34	3.99
Nevada	507		284613		3100	2	11	6.11
New Mexico	1030		314457		7411	3	24	7.20
Utah	1099		212629		6187	5	29	5.63
South Rocky Mt.	6768	3.30	1374203	17.90	33339	5	24	4.93
W E S T	34378	16.76	3043672	39.65	94191	11	31	2.74
U S A	205153	100.00	7676762	100.00	255978	27	33	1.23

Sources: USDA, Forest Service. 1973. The Outlook For Timber in the United States. FRR-20, Washington, D.C. and U.S.Bureau of the Census. 1972 Statistical Abstract of the United States. Washington, D.C.

+) Data include Washington, D.C.

T A B L E I-C

LAND AREA AND POPULATION DENSITY OF THE FEDERAL REPUBLIC
OF GERMANY BY STATE AND REGION - 1970

Region /Land	Population		A r e a		Density
	(x1000)	(%)	(km ²)	(%)	persons/km ²
NORTH Region	12092.8	19.9	64240.35	25.8	188
Schleswig-Holstein	2494.1	4.1	15675.84	6.3	159
Hamburg	1793.8	2.9	753.15	0.3	2382
Niedersachsen	7082.2	11.7	47407.59	19.1	149
Bremen	722.7	1.2	403.77	0.1	1790
MIDDLE Region	27060.9	44.6	77560.00	31.2	349
Nordrhein-Westfalen	16914.1	27.9	34044.14	13.7	497
Hessen	5381.7	8.9	21110.66	8.5	255
Rheinland-Pfalz	3645.4	6.0	19837.68	8.0	184
Saarland	1119.7	1.8	2567.52	1.0	436
SOUTH Region	19374.4	32.0	106296.52	42.8	182
Baden-Württemberg	8895.0	14.7	35749.60	14.4	249
Bayern	10479.4	17.3	70546.92	28.4	149
West Berlin	2122.3	3.5	480.08	0.2	4421
F R G	60650.4	100.0	248576.95	100.0	244

Source: Statistisches Bundesamt. 1973.
Statistisches Jahrbuch für die Bundesrepublik
Deutschland.
Verlag W.Kohlhammer, Stuttgart.

T A B L E I-D
FORESTS OF THE FEDERAL REPUBLIC OF GERMANY BY POLITICAL UNITS

State or Administrative Unit	Forest Area (1000 ha)	Percent Forested (%)	Forest per capita (ha)
Schleswig-Holstein	129.0	8.5	0.06
Hamburg	3.7	5.6	0.0023
Niedersachsen	944.1	20.6	0.14
Hannover	105.5	16.6	0.07
Hildesheim	184.3	36.3	0.20
Limburg	361.5	34.3	0.38
Stade	60.4	9.3	0.11
Osnabrück	103.0	17.0	0.15
Aurich	7.6	2.4	0.02
Braunschweig	79.6	26.1	0.09
Oldenburg	42.1	8.0	0.06
Bremen	0.1	0.2	0.0001
Nordrhein-Westfalen	752.0	22.6	0.06
Düsseldorf	67.3	12.8	0.01
Köln	89.2	23.0	0.04
Aachen	68.3	22.7	0.07
Münster	101.9	14.2	0.04
Detmold	128.9	20.4	0.08
Arnsberg	296.5	39.3	0.08
Hessen	806.0	39.1	0.17
Darmstadt	225.7	36.7	0.15
Kassel	354.0	39.3	0.29
Wiesbaden	226.2	41.4	0.11
Rheinland-Pfalz	701.5	36.2	0.21
Koblenz	239.0	38.2	0.23
Trier	177.7	36.9	0.39
Montabaur	67.2	39.0	0.27
Rheinhausen	8.2	6.4	0.02
Pfalz	209.5	39.6	0.17
Baden-Württemberg	1231.9	35.5	0.16
Nordwürttemberg	305.4	29.9	0.10
Nordbaden	169.2	33.8	0.10
Südbaden	413.4	42.6	0.25
Südwestfalen- Hohenzollern	343.9	35.3	0.24
Bayern	2283.4	33.7	0.24
Oberbayern	487.4	33.0	0.19
Niederbayern	326.3	30.7	0.34
Oberpfalz	383.9	40.4	0.59
Oberfranken	273.6	37.0	0.25
Mittelfranken	257.8	34.5	0.19
Unterfranken	308.4	37.1	0.28
Schwaben	245.9	25.6	0.19
Saarland	77.3	31.0	0.07
Berlin	7.0	15.4	0.0034
Federal Republic	6936.0	28.8	0.13

Source: Hasel, Karl. 1971. *Waldwirtschaft und Umwelt*.
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APPENDIX II

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